NATURAL HISTORY,

GENERAL AND PARTICULAR,

BY THE

COUNT DE BUFFON.

TRANSLATED INTO ENGLISH,

ILLUSTRATED

WITH ABOVE THREE HUNDRED COPPER-PLATES,

AND OCCASIONAL

NOTES AND OBSERVATIONS,

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NATURAL HISTORY.

THE DOG*.

NEITHER majeſty and elegance of form, ſtrength of body, freedom of movement, nor other external qualities, conſtitute the principal dignity of animated beings. In man, we prefer

* The dog has ſix cutting teeth and two canine in each jaw: He has five toes on the fore feet, and four, and often five, on the hind feet. His tail bends towards the left, a character common to the whole, and firſt obſerved by Linnæus; *Pennant, Synopſ.* p. 141,

CHARACT. GEN.—*Dentes primores* ſuperiores VI. laterales, longiores, diſtantes; intermedii lobati: Inferiores VI. laterales, lobati. *Laniarii*, ſalitarii, incurvati. *Molares* VI. ſ. VII.—CHARACT. SPEC. Canis cauda ſiniſtrorſum recurvata; *Linn. Syſt.* 56. Linnæus defines only the eleven following varieties of the dog.

1. *Domeſticus*, auriculis erectis, cauda ſubtus lanata; *the ſhepherd's dog.*
2. *Sagax*, auriculis pendulis, digito ſpurio ad tibias poſticas; *the hound.*
3. *Graius*, magnitudine lupi, trunco curvato, roſtro attenuato; *common grey-hound.*
4. *Moloſſus*, magnitudine lupi, labiis ad latera pendulis, corpore toroſo; *the maſtiff.*
5. *Aquaticus*, pilo criſpo, longo, inſtar ovis; *the water dog.*
6. *Meliteus*, magnitudine ſciuri; *the ſhock-dog*, or *lap-dog.*

 7. *Fricator*,

prefer genius to figure, courage to ſtrength, and ſentiment to beauty; and, therefore, we are induced to think, that the chief excellence of an animal conſiſts alſo of internal qualities. By theſe he differs from an automaton, riſes above the vegetable tribes, and approaches the human ſpecies. It is ſentiment which ennobles, governs, and gives activity to all his organs and propenſities. Hence the perfection of an animal depends on ſentiment alone; and, in proportion to its extent, his faculties, reſources, and relations with the reſt of the univerſe, are augmented. When his ſentiment is delicate, and improved by education, he is then fit to aſſociate with man, to concur with his deſigns, to aid, to defend, and to careſs him. By a frequent performance of theſe ſervices, he conciliates the favour of his maſter, and, from a tyrant, converts him into a friend and protector.

The dog, independent of the beauty of his figure, his ſtrength, vivacity, and nimbleneſs, poſſeſſes every internal excellence which can attract the regard of man. A paſſionate, and even a ferocious and ſanguinary temper, renders the wild dog formidable to all animals. But, in the

7. *Fricator*, naſo, reſimo, auribus pendulis corpore quadrato; *the pug-dog*.
8. *Vertagus*, pedibus curvatis, trunco longo, ſæpius variegato; *the tumbler*.
9. *Avicularius*, cauda truncata.
10. *Extrarius*, auriculis longis, lanatis, pendulis.
11. *Egyptius*, nudus abſque pilis; *the Turkiſh dog*.

domeſtic

domeſtic dog, theſe hoſtile diſpoſitions vaniſh, and are ſucceeded by the ſofter ſentiments of attachment, and the deſire of pleaſing. He runs with chearfulneſs and alacrity to his maſter's foot, where he lays down his courage, his ſtrength, and his talents. He attends for orders, which he is always ſolicitous to execute. He conſults, he interrogates, he ſupplicates his maſter. A ſingle glance of the eye is ſufficient; for he knows the external ſigns of our intentions and wiſhes. Without being endowed, like man, with the faculty of thinking, his feelings are extremely delicate, and he has more fidelity and ſteadineſs in his affection. He is not corrupted by ambition, by intereſted views, or by a deſire of revenge; and he has no fear, but that of diſpleaſing. He is all zeal, ardour, and obedience. More apt to recal benefits than outrages, he is not diſcouraged by blows or bad treatment, but calmly ſuffers, and ſoon forgets them; or he remembers them only to increaſe his attachment. Inſtead of flying, or diſcovering marks of reſentment, he expoſes himſelf to torture, and licks the hand from which he received the blow. To the cruely of his maſter, he only oppoſes complaint, patience, and ſubmiſſion.

More tractable than man, and more pliant than any other animal, the dog is not only ſoon inſtructed, but even conforms himſelf to the manners, movements, and habits of thoſe who

govern him. He aſſumes the very tone of the family in which he lives. Like other ſervants, he is haughty with the great, and ruſtic with the peaſant. Always eager to obey and to pleaſe his maſter, or his friends, he pays no attention to ſtrangers, and furiouſly repels beggars, whom he diſtinguiſhes by their dreſs, their voice, and their geſtures. When the charge of a houſe or garden is committed to him during the night, his boldneſs increaſes, and he ſometimes becomes perfectly ferocious. He watches, goes the rounds, ſmells ſtrangers at a diſtance, and, if they ſtop or attempt to leap any barrier, he inſtantly darts upon them, and, by barking, and other marks of paſſion, alarms the family and neighbourhood. Equally furious againſt thieves as againſt rapacious animals, he attacks and wounds them, and forces them from whatever they have been attempting to carry off: But, contented with victory, he lies down upon the ſpoil, and will not touch it even to ſatisfy his appetite, exhibiting, at the ſame time, an example of courage, temperance, and fidelity.

To conceive the importance of this ſpecies in the order of Nature, let us ſuppoſe that it never exiſted. Without the aſſiſtance of the dog, how could man have conquered, tamed, and reduced the other animals into ſlavery? How could he ſtill diſcover, hunt down, and deſtroy noxious and ſavage beaſts? For his own ſafety, and to render him maſter of the animated world, it was neceſſary

neceſſary to form a party among the animals themſelves, to conciliate by careſſes thoſe which were capable of attachment and obedience, in order to oppoſe them to the other ſpecies. Hence the training of the dog ſeems to have been the firſt art invented by man; and the reſult of this art was the conqueſt and peaceable poſſeſſion of the earth.

Moſt animals are ſuperior to man in agility, ſwiftneſs, ſtrength, and even in courage: Nature has fortified and armed them better. Their ſenſes, and particularly that of ſmelling, are likewiſe more perfect. To have brought over to our intereſt a bold and tractable ſpecies, like that of the dog, was to acquire new ſenſes and faculties. The machines and inſtruments we have invented to improve or to extend our other ſenſes, are not nearly ſo uſeful as thoſe preſented to us ready made by Nature, which, by ſupplying the defects of our ſmelling, have furniſhed us with great and permanent reſources for conqueſt and dominion. The dog, ever faithful to man, will always maintain a portion of this empire; he will always preſerve a degree of ſuperiority above the other animals. He reigns at the head of a flock, and is better heard than the voice of the ſhepherd. Safety, order, and diſcipline, are the fruits of his vigilance and activity. Sheep and cattle are a people ſubjected to his management, whom he prudently conducts and protects, and never employs force againſt them,

them, but for the preſervation of peace and good order.

But in war againſt his enemies, or wild animals, he makes a full diſplay of his courage and intelligence. Here his natural and acquired talents are united. As ſoon as the din of arms is heard, as ſoon as the horn, or the voice of the hunter, gives the alarm, the dog, ſparkling with redoubled ardour, demonſtrates his joy by the moſt lively emotions: He announces, by his movements and cries, his impatience for the combat, and his paſſion for victory. Sometimes he moves ſilently along, reconnoitres the ground, and endeavours to diſcover and ſurpriſe the enemy. At other times, he traces the animal's ſteps, and, by different accents, indicates the diſtance, the ſpecies, and even the age of the fugitive. Puſhed, intimidated, and deſpairing of ſafety from flight alone, the poor animal likewiſe exerts its faculties, and oppoſes craftineſs to ſagacity*. The reſources of inſtinct are now worthy of admiration. To make him loſe the ſcent, the creature doubles, returns on its former ſteps, bounds, and wiſhes to detach itſelf from the earth; at one leap it often clears a high way, or a hedge, and ſwims over brooks and rivers. But, always purſued, and being unable to conceal or annihilate its body, the animal endeavours to ſtart another of leſs experience, and, after running together till the former imagines that the

* See below, article Deer.

two ſcents or traces are confounded, it then ſuddenly ſeparates, in order to let the other fall a victim to the deceived enemy.

But the dog, by the ſuperiority he has acquired from habit and education, and from the peculiar fineneſs of his ſenſations, loſes not the object of his purſuit. By the acuteneſs of his ſcent, he unravels all the windings of the labyrinth, all the falſe routs which were intended to deceive him; and, inſtead of abandoning the enemy for an indifferent animal, he redoubles his ardour, he overtakes, attacks, ſlays, and extinguiſhes his thirſt and his rage in the blood of the victim.

The propenſity to hunting, or to war, is equally ſtrong in man as in other animals. The whole knowledge of the Savage is confined to fighting and hunting. All carnivorous animals, which have weapons and ſtrength, hunt naturally. The lion and the tiger, whoſe ſtrength is ſo great as to enſure them of victory, hunt alone, and without artifice. Wolves, foxes, and wild dogs, hunt in packs, aſſiſt each other with much art, and mutually ſhare in the prey. When the natural talents of the dog have been improved by education, when he has learned to repreſs his ardour, and to regulate his movements, he then hunts artificially, and is always certain of ſucceſs.

In deſert and depopulated countries, there are wild dogs, which, in their manners, differ not from wolves,

wolves, except by the facility with which they may be tamed. They unite in troops, and attack wild boars, and bulls, and even lions and tigers. The wild dogs of America are of the domeſtic race, and were tranſported thither from Europe. Some of them have been abandoned in theſe deſerts, where they have multiplied ſo prodigiouſly, that they ſpread over the inhabited countries in great packs, and attack the domeſtic cattle, and even inſult the natives, who are obliged to diſperſe and kill them, like other ferocious animals. Wild dogs, though they have no knowledge of man, when approached with gentleneſs, ſoon ſoften, become familiar, and remain faithfully attached to their maſters. But the wolf, though taken young, and brought up in the houſe, is gentle when a mere cub only, never loſes his taſte for prey, and ſooner or later indulges his inclination for rapine and deſtruction.

The dog may be ſaid to be the only animal whoſe fidelity is unſhaken; who always knows his maſter, and the friends of the family; who diſtinguiſhes a ſtranger as ſoon as he arrives; who underſtands his own name, and the voices of the domeſtics; who confides not in himſelf; who calls on his loſt maſter by cries and lamentations; who, in long journeys, which he has travelled but once, remembers and finds out the roads: In fine, the dog is the only animal whoſe

natural

natural talents are conſpicuous, and whoſe education is always ſucceſsful.

Of all animals, the dog is alſo moſt ſuſceptible of impreſſions, moſt eaſily modified by moral cauſes, and moſt ſubject to alterations occaſioned by phyſical influence. His temperament, faculties, and habits, vary prodigiouſly; and even the figure of his body is by no means conſtant. In the ſame country, one dog differs greatly from another; and, in different climates, the very ſpecies ſeems to be changed. From theſe cauſes, the number and mixture of races are ſo great, that it is almoſt impoſſible to recogniſe or enumerate them. To the ſame cauſes muſt be attributed thoſe remarkable varieties in ſize, figure, length of muzzle, form of the head, length and direction of the ears and tail, colour, quantity of hair, &c. In a word, nothing ſeems to be permanent in theſe animals but their internal organization, and the faculty of procreating together. As thoſe which differ moſt from each other are capable of intermixing, and of producing fertile individuals, it is evident, that all dogs, however diverſified, conſtitute but one ſpecies.

In this numerous variety of races, it is difficult to inveſtigate the character of the primitive ſtock from which they have all ſprung. How ſhall the effects produced by the influence of climate, food, &c. be diſtinguiſhed? How ſhall we perceive the changes introduced by the mixture

mixture of different races when in a wild, or in a domestic state? In the progress of time, all these causes alter the most permanent forms; and the original stamp of Nature never preserves its purity in beings which have been long under the management of man. This original impression is best preserved in those animals that have the independent choice both of their climate and food, the most ancient of which are still faithfully represented by their descendants. But those which man has subdued, transported from climate to climate, and changed their food, their habits and manner of living, must necessarily have suffered the greatest alterations in their form; and, it is a well known fact, that there are more varieties among the domestic than the wild animals: And, of all domestic animals, as the dog is most closely attached to man, lives as irregularly, and is endowed with dispositions which render him docile, obedient, susceptible of every impression, and submissive to every restraint, it is not surprising that he should likewise exhibit the greatest variety in figure, size, colour, and other qualities.

But other causes concur in producing these changes. The life of the dog is short; his prolific powers are great; and, as he is perpetually under the eye of man, whenever by any accident, which is not uncommon in Nature, some individuals, marked with singular characters, appeared, they would be perpetuated by prevent-

ing their intermixture with any other kinds, as is done at preſent when we want to procure new races of dogs, or of other animals. Beſides, though every ſpecies were equally ancient, the number of generations, from the creation, being greater in thoſe whoſe lives are ſhort, their varieties, alterations, and even degeneration, muſt become more conſpicuous; becauſe they are farther removed from the original ſtock than thoſe which live longer. Man is at preſent eight times nearer Adam, than the dog to his firſt parent; becauſe man lives eighty years, and the dog only ten. If, therefore, by any cauſe, theſe two ſpecies had an equal tendency to degenerate, the alteration would be ten times more ſtrongly marked in the dog than in man.

Thoſe ſmall animals whoſe lives are ſo ſhort, that they are ſucceeded every year by a new generation, are infinitely more ſubject to variations of every kind than thoſe which live longer. The ſame remark is applicable to annual plants; ſome of which may be conſidered as of an artificial or factitious nature. Wheat, for example, has been ſo greatly altered by man, that it is now no where to be found in a natural ſtate. It has a ſimilarity to darnel, dog's-graſs, and ſeveral other graſſes; but ſtill we know not to which of theſe plants it ought to be referred: And, as it is annually renewed, is uſed as the common food of man, and more cultivated than any other vegetable, its nature, of courſe, has undergone

undergone the greateſt alterations. Hence man is able, not only to make every individual in the univerſe anſwer his own ends, but, with the aſſiſtance of time, he can change, modify, and improve their ſpecies. This is the chief power he poſſeſſes over Nature. To have transformed a barren herb into wheat, is a kind of creation, of which, however, we have no reaſon to boaſt, ſince it is only by the ſweat of our brows, and reiterated culture, that we are able to extract from the earth a ſcanty, and often a bitter ſubſiſtence.

Hence, both in the animal and vegetable kingdoms, the ſpecies which have received the higheſt culture from man, have undergone the greateſt changes from their original condition: And, as we are often unable to recogniſe their primitive form, as in the example of wheat and other grain, it is not impoſſible, that, among the numerous varieties of dogs which at preſent ſubſiſt, not one of them ſhould reſemble the firſt animal of the ſpecies that virtually gave birth to the whole.

Nature, however, when not reſtrained, never fails to reſume her rights. Wheat, when ſown on uncultivated ground, degenerates the very firſt year; and, if ſown for a ſucceſſion of ages upon the ſame ground, the degeneration would gradually proceed till the plant acquired its original form. By an experiment of this kind, the time required by Nature for deſtroying the effects

effects of art, and resuming her pristine state, might be discovered. This experiment might be easily performed on plants: But, in animals, there is little hope of its success; because it is difficult to manage them with sufficient dexterity, or to overcome their invincible repugnance against every thing that restrains or counteracts their natural or acquired habits. We cannot, therefore, expect to learn, by this method, the primitive race of dogs, or of other animals which are subject to permanent varieties. But, to supply the place of facts which cannot be ascertained, we may collect particular marks, and from these draw probable conjectures.

The domestic dogs which were abandoned in the deserts of America, and have lived in a wild state during 150 or 200 years, though originally derived from altered races, must, during so long a course of time, have made greater or smaller approaches toward their primitive form. Travellers, however, inform us, that they resemble our grey-hounds*. They make the same remark with regard to the wild dogs of Congo†, which, like those of America, make war in packs against tigers, lions, &c. But others, without comparing the wild dogs of St. Domingo to grey-hounds, only observe, that they have generally a long flat head, a slender muzzle,

* Hist. des Avanturiers Flibustiers, par Œxmelin, tom. i. p. 112. † Hist. Gen. des Voyages, par l'Abbé Prevost, tom. i. p. 86.

muzzle, a ferocious air, and meagre bodies; that they are exceedingly ſwift in the chaſe, hunt in the moſt perfect manner, and are eaſily tamed, when taken young *. Thus theſe wild dogs are very meagre and fleet; and, as the common grey-hound differs little, in other reſpects, from the Iriſh grey-hound, or from the ſhepherd's dog, it is probable that thoſe wild dogs rather belong to this kind than to the true grey-hound race; for, on the other hand, the more ancient travellers tell us, that the native dogs of Canada had erect ears, like the fox, and reſembled our village or ſhepherd's dog †; that thoſe belonging to the ſavages of the Antilles had very long heads and ears, and approached to the figure of foxes ‡; that the Indians of Peru had only a large and a ſmall kind, which they called *Alco* ‖; and that thoſe of the Iſthmus of America were very ugly, and had long, coarſe hair, which likewiſe implies erect ears §. Hence it is apparent, that the original dogs of America, before they had any communication with thoſe of Europe, were all of one race, and that they approached moſt to the dogs with ſlender muzzles, erect ears, and coarſe hair, like the ſhepherd's

* Nouv. Voyages aux Iſles de l'Amerique, tom. v. p. 195.

† Voyage du Pays des Hurons, par Sabard Theodat, p. 310.

‡ Hiſt. Gen des Antilles, par le P. du Tertre, tom. ii. p. 306.

‖ Hiſt des Incas, tom. i. p. 265. Wafer's Voyage ſubjoined to thoſe of Dampier, vol. iv. p. 223. § Nouveaux Voyages aux Iſles de l'Amerique, tom. v. p. 195.

dog:

dog: And I am ſtill farther convinced that the wild dogs of St. Domingo are not genuine greyhounds, becauſe the latter are ſo rare in France that they are brought, for the uſe of the King, from Conſtantinople and other parts of the Levant, and becauſe I never knew that any greyhounds were tranſported to France from St. Domingo, or any of our American colonies. Beſides, by conſulting what travellers had ſaid concerning the dogs of different countries, we find that all the dogs of cold climates have long muzzles and erect ears; that thoſe of Lapland are ſmall, and have long hair, erect ears, and ſharp muzzles *; that the Siberian dogs †, and thoſe called wolf-dogs, are larger than the Lapland kind; but their ears are ſtill erect, their hair coarſe, and their muzzle ſharp; that thoſe of Iceland ‡ are nearly ſimilar to the Siberian dog; and in the ſame manner, that the native dogs of the Cape of Good Hope ‖, and other warm climates, have pointed muzzles, erect ears, long trailing tails, and clear, but long, rough hair; that theſe dogs are excellent for guarding flocks, and, of courſe, that they reſemble the ſhepherd's dog, not only in figure, but in inſtinct; that, in ſtill warmer climates, as at Madagaſcar §, Madura **,

* Voyage de la Martiniere, p. 73. Il Genio Vagante, vol. ii. p. 13. † See plate XXIX. ‡ See plate XXX. ‖ Deſcription du Cap, par Kolbe, part i. p. 304. § Voyage de Flacourt, p. 152. ** Voyage d'Innigo de Biervillas, p. 178.

Calicut *, and Malabar †, the native dogs have all long muzzles, erect ears, and have ſuch a reſemblance to the ſhepherd's dog, that when Iriſh grey-hounds, ſpaniels, water-dogs, bull-dogs, blood-hounds, grey-hounds, &c. were tranſported thither, they degenerated at the ſecond or third generation; laſtly, that, in exceſſive warm countries, as in Guiney ‡, this degeneration is ſtill quicker; for, in three or four years, they loſe their voice, bark no more, but make a diſmal kind of howling noiſe; and their progeny have erect ears, like the fox. The native dogs of theſe countries are ugly animals, with ſharp muzzles, long erect ears, and long pointed tails. There is no hair on their bodies; their ſkin is commonly ſpotted, but ſometimes of a uniform colour: In a word, they are diſagreeable to the eye, and ſtill more ſo to the touch.

We may, therefore, ſuppoſe, with ſome degree of probability, that the ſhepherd's dog approaches nearer to the primitive race than any of the other kinds; for in every country inhabited by ſavage or by half civilized men, the native dogs reſemble this race more than any other. Beſides, in the whole of the New Continent, there was no other variety; neither is there any other at the ſouth and north extremities

* Voyage de Francis Pyrard, tom. i. p. 426. † Voyage de Jean Ovington, tom. i. p. 276. ‡ Hiſt. Gen. des Voyages, par M. l'Abbé Prevoſt, tom. iv. p. 229.

mities of our own continent; and in France, and other temperate climates, they are very numerous, though greater attention has been paid to the rearing of more beautiful kinds, than to the preſervation of this race, which has no recommendation but its utility, and for that reaſon has been abandoned to the care of the ſheep farmers. If it be farther conſidered, that this dog, notwithſtanding his uglineſs, and his wild and melancholy aſpect, is ſuperior in inſtinct to all others; that he has a decided character independent of education; that he alone is born fully trained; that, guided ſolely by natural powers, he applies himſelf ſpontaneouſly to the keeping of flocks, which he executes with amazing fidelity, vigilance, and aſſiduity; that he conducts them with an admirable and uncommunicated intelligence; that his talents at the ſame time aſtoniſh and give repoſe to his maſter, while other dogs require the moſt laborious inſtruction to train them to the purpoſes for which they are deſtined; we will be confirmed in the opinion, that the ſhepherd's dog is the true dog of Nature; that he has been preferably beſtowed on us for the extent of his utility; that he has a ſuperior relation to the general order of animated beings, who mutually depend on each other; and, laſtly, that he ought to be regarded as the origin and model of the whole ſpecies.

In the frozen regions of the north, the human ſpecies is deformed, ruſtic, and diminutive. Lap-

land, Greenland, and all countries where the cold is exceſſive, produce only dwarfiſh and ugly men. But, in the neighbouring and leſs rigorous regions of Finland, Denmark, &c. the moſt beautiful race ſuddenly appears; for, in figure, colour, and ſtature, they are perhaps the handſomeſt of the human kind. The ſame phænomenon is exhibited in the dog-ſpecies. The Lapland dogs are very ugly, and ſo ſmall, that they exceed not a foot in length *. Thoſe of Siberia, though leſs ugly, have erect ears, and a ſavage aſpect: But, in the neighbouring climate, where we meet with the handſome men already mentioned †, we find alſo the moſt beautiful and largeſt dogs. The dogs of Tartary, of Albania, of the north of Greece, of Denmark, and of Ireland, are the largeſt and ſtrongeſt of the ſpecies, and are uſed for drawing carriages. The Iriſh grey-hounds are of a very ancient race, and ſtill exiſt, though their number is ſmall, in their original climate. They were called by the ancients dogs of Epirus, and Albanian dogs. Pliny has recorded, in moſt elegant and energetic terms, a combat between one of theſe dogs, firſt with a lion, and then with an elephant ‡. They are much

* Il Genio Vagante, vol. ii. p. 13.

† See vol. iii. art. Varieties of the Human Species.

‡ Indiam petenti Alexandro magno, Rex Albaniæ dono dederat inuſitatæ magnitudinis unum, cujus ſpecie delectatus, juſſit urſos, mox apros, et deinde damas emitti, contemptu immobili jacenti eo; qua ſegnitie tanti corporis offenſus Imperator generoſi ſpiritus, eum interimi juſſi. Nunciavit hoc fama

much larger than the maſtiff. In France, they are ſo rare, that I never ſaw above one of them, which appeared, when ſitting, to be about five feet high, and reſembled in figure the Daniſh dog *; but greatly exceeded him in ſtature. He was totally white, and of a mild and peaceable diſpoſition. We find, then, in all the temperate climates, as in Britain, France, Germany, Spain, and Italy, men and dogs of all races. This variety proceeds partly from the influence of climate, and partly from the great concourſe and intermixture of foreigners. With regard to dogs, I ſhall mark, with all poſſible attention, the ſimilarities and differences which ſhelter, care, food, and climate, have produced among theſe animals.

The Daniſh dog †, the Iriſh grey-hound ‡, and the common grey-hound ||, though they appear to be different, are only the ſame dog. The Daniſh dog is but a more corpulent Iriſh

fama regi; itaque alterum mittens, addidit mandata ne in parvis experiri vellet, ſed in leone, elephantove; duos ſibi fuiſſe hoc interempto, præterea nullum fore. Nec diſtulit Alexander, leonemque fractum protinus vidit. Poſtea elephantum juſſit induci, haud alio magis ſpectaculo lætatus. Horrentibus quippe per totum corpus villis, ingenti primum latratu intonuit, moxque increvit aſſultans, contraque belluam exſurgens hinc et illinc artifice dimicatione, qua maxime opus eſſet, infeſtans, atque evitans, donec aſſidua rotatam vertigine afflixit, ad caſum ejus tellure concuſſa. *Plin. Hiſt. Nat. lib.* viii.

* See plate XXV.

† See plate XXV.

‡ See plate XXIV.

|| See plate XXVI.

 grey-

grey-hound; and the common grey-hound is the Iriſh grey-hound rendered thinner and more delicate by culture; for theſe three dogs, though perfectly diſtinguiſhable at firſt ſight, differ not more from each other than a Dutchman, a Frenchman, and an Italian. If we ſuppoſe the Iriſh grey-hound to have been a native of France, he would have produced the Daniſh dog in a colder climate, and the common grey-hound in a warmer one: And this conjecture is even verified by experience; for the Daniſh dogs come to us from the north, and the grey-hounds from Conſtantinople and the Levant. The ſhepherd's dog *, the Pomeranian or wolf-dog †, the Siberian dog ‡, to which may be joined the Lapland dog, the Canadian dog, the Hottentot dog, and all thoſe which have erect ears, conſtitute but one kind. They differ from the ſhepherd's dog only in ſtature, in being more or leſs groſs, or in the length, coarſeneſs, or buſhineſs of their hair. The hound ‖, the harrier §, the turnſpit**, the water-dog ††, and even the ſpaniel ‡‡, may be regarded as one dog. Their figure and inſtincts are nearly the ſame; and they differ only in the length of their legs, and the ſize of their ears, which, however, in all of them, are long, ſoft, and pendulous. Theſe dogs are natives of France; and I am uncertain whether the Dalma-

* See plate XXVII. † Plate XXVIII. ‡ Plate XXIX.
‖ Plate XXXI. § Plate XXXII. ** Plate XXXIV.
†† Plate XXXVI. ‡‡ Plate XXXVII.

tian

tian dog*, or, as it is called, the harrier of Bengal, ought to be disjoined from them; for it differs from our harrier only in colour. I am convinced that this dog is not an original native of Bengal, or of any other part of India, and that it is not, as has been pretended, the Indian dog mentioned by the ancients, and ſaid to have been produced between a dog and a tiger; for it has been known in Italy above 170 years ago, and not conſidered as a dog brought from India, but as a common harrier: 'Canis 'ſagax, vulgo brachus,' ſays Aldrovandus 'an 'unius vel varii coloris ſit, parum refert; in 'Italia eligitur varius et maculoſæ lynci per-'ſimilis; cum tamen niger color, vel albus, aut 'fulvus, non ſit ſpernendus †.'

Britain, France, Germany, &c. appear to have given birth to the hound, the harrier, and the turnſpit: When tranſported into climates a little warmer, as Turkey or Perſia, theſe dogs degenerate. But the ſpaniels and water-dogs are natives of Spain and Barbary, where the temperature of the climate renders the hair of all animals longer and finer than in any other country. The bull-dog ‡, what is improperly called the ſmall Daniſh dog, for it has no other reſem-

* Dalmatia, I have been informed, ſays Mr. Pennant, is the country of this elegant dog. As for thoſe of India, they are generally ſmall, and very ugly, or, if the European dogs are brought there, they immediately degenerate. *Synopſ. of Quad.* p. 145. † Aldrovand. Quad. Digit. lib. iii. p. 552.

‡ See plate XLII.

blance to the Daniſh dog* than the ſhortneſs of its hair, the naked or Turkiſh dog †, and the Iceland dog ‡, conſtitute but one race, which, being tranſported from cold countries, where the fur is always ſtrong, into the warmer climates of Africa and India, have loſt their hair; for the naked dog is improperly called the Turkiſh dog: It is not in the temperate climate of Turkey that dogs loſe their hair, but in Guiney, and the warm regions of India. The Turkiſh dog is nothing but the ſmall Daniſh dog, which has firſt been tranſported to a very warm climate, where it caſt its hair, and afterwards brought to Turkey, and propagated carefully on account of its ſingularity. The firſt of them, ſays Aldrovandus, which appeared in Europe, were brought into Italy in his own time, where they could not be propagated, becauſe the climate was too cold for them. But, as he gives no deſcription of theſe naked dogs, we know not whether they were ſimilar to what is now called the Turkiſh, nor, conſequently, whether they can be referred to the ſmall Daniſh dog; becauſe dogs of every kind loſe their hair in very warm climates ‖; and, as formerly remarked, they alſo loſe their voice. In ſome countries, they are perfectly mute; in others, they loſe only the faculty of barking, but howl like wolves,

* See plate XXV. † Plate XLI. ‡ Plate XXX.

‖ Hiſt. Gen. des Voyages, par M. l'Abbé Prevoſt, tom. iv. p. 229.

or

or yelp like foxes. This change ſeems to make them approach to their natural ſtate; for both their figure and inſtincts are altered: They aſſume an ugly aſpect, and their ears become erect and pointed *. It is only in temperate climates that dogs preſerve their ardour, courage, ſagacity, and other talents. They loſe every thing, when tranſported to very hot countries. But, as if Nature never made any thing perfectly uſeleſs, in climates where dogs cannot ſerve the purpoſes for which we employ them, they are in great requeſt for the table, and their fleſh is preferred by the Negroes to that of all other animals. They ſell dogs in the market as dear as mutton, veniſon, or game of any kind, a roaſted dog being the moſt luxurious feaſt to a Negro. Perhaps this remarkable appetite for dogs fleſh is owing to a change produced in its quality by the heat of the country; for, in our climates, it is extremely diſagreeable. But I am inclined to think that this appetite depends more on the nature of man than that of the dog; for the ſavages of Canada, who inhabit a cold country, are as fond of dogs fleſh as the Negroes; and our miſſionaries ſometimes eat of it without diſguſt. P. Sabard Theodat remarks, ‘ that dogs are uſed, as

* Voyage de la Boullaye-le-Gouz, p. 257.; Voyages de Jean Ovington, tom. i. p. 276.; Hiſtoire Univerſelle des Voyages, par du Perrier de Montfraſier, p. 344. et ſuivantes; Vie de Chriſtophe Colomb. part i. p. 106.; Voyage de Boſman en Guinée, &c. p. 240.; Hiſtoire Generale des Voyages, par M. l'Abbé Prevoſt, tom. iv. p. 229.

 ‘ we

'we uſe mutton, at feaſts. I have ſeveral times 'been preſent at theſe dog-feaſts, which at firſt 'ſtruck me with a degree of horror; but, after 'taſting it twice, I found that the fleſh was good, 'and had a flavour ſomewhat reſembling that 'of pork *.'

In our climates, the wolf and fox make the neareſt approach to the dog, particularly to the ſhepherd's dog, which I conſider as the original ſtock of the ſpecies: And, as their internal ſtructure is almoſt entirely the ſame, and their external differences very ſlight, I wiſhed to try if they would intermix and produce together. I hoped, at leaſt, to make them copulate; and, if they produced not fertile individuals, I expected to procure mules which would participate of the nature of both animals. With this view, I reared a ſhe-wolf, taken in the woods at the age of three months, along with an Iriſh grey-hound of the ſame age. They were ſhut up together in a pretty large court, to which no other beaſt could have acceſs, and where they were provided with a ſhelter for their retirement. They were equally ſtrangers to any individual of their own ſpecies, and knew no perſon but the man who gave them their victuals. They were kept in this ſtate three years, without the ſmalleſt reſtraint. During the firſt year, they played perpetually, and ſeemed to be extremely fond of each other. The

* Voyage au Pays des Hurons, par le P. Sabard Theodat, p. 311.

ſecond

ſecond year they began to quarrel about their food, though they were ſupplied in a plentiful manner. The wolf always began the diſpute. When meat and bones were given them on a large wooden diſh, the wolf, inſtead of ſeizing the meat, inſtantly drove off the dog, then laid hold of the edge of the plate ſo dexterouſly as to allow nothing to fall, and carried off the whole. I have ſeen her run, in this manner, with the diſh in her teeth, five or ſix times round the wall, and never ſet it down, unleſs to take breath, to devour the meat, or to attack the dog, when he approached. The dog was ſtronger than the wolf: But as he was leſs ferocious, we began to be apprehenſive of his life, and therefore furniſhed him with a collar. After the ſecond year, theſe quarrels and combats became more frequent, and more ſerious, and a collar was alſo given to the wolf, whom the dog now handled more roughly than before.

During theſe two years, not the ſmalleſt ſymptom of deſire appeared either in the one or the other. At the end of the third year, they began to feel all the ardour of paſſion; but diſcovered no marks of love. This condition, inſtead of ſoftening and making them approach each other, rendered them more untractable and ferocious.—Nothing now was heard but diſmal howlings, and cries of reſentment. In three weeks they were both very meagre; but never approached except to tear each other. At laſt they fought

fought ſo cruelly that the dog killed the wolf. The dog was ſhot ſome days after, becauſe as ſoon as he was ſet at liberty he ſprung with fury upon poultry, dogs, and even men.

I had, at the ſame time, three young foxes, two males and a female, which were taken with nets, and kept in ſeparate apartments. One of them was ſecured by a long, light chain, and a hut was built for ſheltering him. I kept him ſeveral months; and, though he had a melancholy air, and kept his eyes fixed upon the fields, of which he had a view from his hut, yet both his health and appetite were good. A bitch in ſeaſon was preſented to him; but, as ſhe would not remain near the fox, ſhe was chained in the ſame place, and both were amply provided with victuals. The fox neither bit nor maltreated her. During ten days that they lived together, there was not the ſmalleſt quarrel, neither night nor day, nor during the time of feeding. The fox even approached her pretty familiarly; but as ſoon as he had ſcented her too near, the mark of deſire diſappeared, he mournfully returned to his hut, and no commixture took place. When the ardour of this bitch was gone, another, and afterwards a third, and a fourth, were ſucceſſively preſented to him. He treated them with the ſame gentleneſs, and the ſame indifference. To aſcertain whether this indifference was owing to a natural repugnance, or to a ſtate of reſtraint, he was furniſhed with a female of his

his own ſpecies, which he covered more than once the firſt day. The female was diſſected ſome weeks after, and four fœtuſes were found in the uterus. The male fox was then let looſe in a cloſe court, and ſucceſſively furniſhed with ſeveral bitches in ſeaſon: He diſcovered neither hatred nor love to them; and he died of chagrin and melancholy a few months afterwards.

From theſe experiments we learn, that the wolf and fox are very different in their natures from the dog; that their ſpecies are ſo diſtinct and remote from each other, as to prevent their commixture, at leaſt in our climates; that, conſequently, the dog derives not his origin from the wolf or the fox; and that the nomenclators *, who regard theſe two animals as wild dogs, or who imagine the dog to be a wolf or a fox become domeſtic, and give the whole three the common name of *Dog*, have deceived themſelves by not ſufficiently ſtudying Nature †.

In

* Canis cauda ſiniſtrorſum recurvata, *the dog*. Canis cauda incurvata, *the wolf*. Canis cauda recta, apice albo, *the fox*. *Linn. Syſt. p.* 59.

† Here the ingenious author ſeems to have made his concluſion from theſe experiments too general. For Mr. Pennant, in his Synopſis of Quadrupeds, p. 144. records a recent inſtance of a fertile intercourſe between a wolf and a bitch: His words are: 'Mr. Brook, animal-merchant in Holborn, turned a wolf to 'a Pomeranian bitch in heat. The congreſs was immediate, 'and as uſual between dog and bitch: She produced ten 'puppies. I have ſeen one of them that had very much the re-'ſemblance of the wolf, and much of its nature: Being ſlipped at 'a weak deer, it inſtantly caught at the animal's throat, and 'killed

In warm climates, there is a ferocious animal which differs leſs from the dog than the wolf or fox: This animal, called the *Jackal*, has been well deſcribed by travellers. They are very numerous in Aſia, and Africa, in the neighbourhood of Trebiſond*, round Mount Caucaſus, in Mingrelia †, Natolia ‡, Hyrcania ‖, Perſia, India, Guiney, and at Surat §, Goa, Guzarat, Bengal, Congo **, and ſeveral other places. Though this animal is conſidered by the natives as a wild dog, yet, as it is doubtful whether they intermix and produce together, we ſhall treat of the jackal, the wolf, and the dog, as ſeparate and diſtinct ſpecies.

I pretend not abſolutely to affirm, that the jackal, or even the wolf and fox, in no age or country, never intermixed with dogs. The contrary is aſſerted poſitively by the ancients. Ariſtotle†† remarks, that, though animals of different ſpecies ſeldom intermingle; yet it certainly happens among dogs, foxes, and wolves: He adds, that the Indian dogs proceed from another ſimilar wild beaſt and the dog. This wild beaſt, to which he gives no name, is probably

'killed it.'—It is to be regretted, that Mr. Pennant gives no information as to the fertility or ſterility of theſe mules.

* Voyages de Gemelli Carreri, tom. i. p. 419. † Chardin, p. 76. ‡ Voyage de Dumont, tom. iv. p. 28. ‖ Chardin, tom. ii. p. 29. § Voyage d'Innigo de Biervillas, part. i. p. 178. ** Voyage de Boſman, p. 241, 331. Voyage du P. Zuchel, p. 293. †† Ariſt. de Generat. Animal. lib. ii. cap. 5.

the

the jackal. But he obſerves, in another place*, that the Indian dogs proceed from a commixture between the tiger and the bitch. This notion is extremely improbable; becauſe the tiger, both in his form and diſpoſitions, differs much more from the dog than the wolf, the fox, or the jackal. Ariſtotle indeed appears to violate his own argument; for, after telling us, that the Indian dogs proceeded from a wild beaſt ſimilar to the wolf or fox, he ſays afterwards, that they proceed from the tiger, without mentioning whether this conjunction was made between the tiger and bitch, or between the dog and tigreſs: He only adds, that the affair did not ſucceed till the third trial; that the firſt litter conſiſted ſolely of tigers; that dogs were chained in the deſerts, and, unleſs the tiger was in ſeaſon, they were often devoured; that the great heat, and ſcarcity of water, made the production of monſters and prodigies very frequent in Africa, becauſe numbers of animals were obliged to aſſemble in the ſame place in order to drink, where they often grew familiar and coupled together. All this ſeems to be not only conjectural and uncertain, but ſuſpicious, and unworthy of credit; for, the more narrowly we examine the nature of animals, we perceive that inſtinct is the moſt certain criterion for judging of them. By the moſt attentive inſpection of their internal parts, we diſcover only ſlight differences.

* Idem, Hiſt. Animal. lib. viii. cap. 28.

ferences. The horſe and aſs, though perfectly ſimilar in their internal ſtructure, are very different in their natures. The internal parts of the bull, the ram, and the he-goat, are exactly the ſame; yet they conſtitute three ſpecies more remote from each other than the aſs and horſe: The ſame remark is applicable to the dog, the fox, and the wolf. We derive more light from inſpecting the external form. But as, in ſpecies which are not remote, there are, even externally, more reſemblances than differences, this inſpection is not ſufficient to determine whether they belong to the ſame or to different ſpecies. In a word, when the ſhades are ſtill lighter, they muſt be combined with the information derived from inſtinct. It is from the diſpoſitions of animals that we ought to judge of their natures: If we ſuppoſe two animals perfectly ſimilar in form, but very different in their diſpoſitions, they would neither join nor produce together, but conſtitute two diſtinct ſpecies.

This mode of judging concerning the differences of neighbouring ſpecies, is the only one that can be employed when we want to diſtinguiſh the numerous varieties which take place in the ſame ſpecies. We know thirty fixed varieties of dogs, though we certainly are not acquainted with the whole. Of theſe thirty varieties, there are ſeventeen which ought to be aſcribed to the influence of climate, namely, the ſhepherd's dog, the Pomeranian dog, the Sibe-

rian dog, the Iceland dog, the Lapland dog, the Irish grey-hound, the common grey-hound, the mastiff, the great Danish dog, the hound, the harrier, the terrier, the spaniel, the water-dog, the small Danish dog, the Turkish dog, and the bull-dog. The other thirteen, which are the mongrel Turkish dog, the grey-hound with hair like a wolf, the shock-dog, or lap-dog, the bastard pug-dog, the pug-dog, the Calabrian, Burgos, and Alicant dogs, the lion-dog, the small water-dog, the dog of Artois, and the King Charles's dog, are nothing but mongrels produced by the commixture of the above seventeen races; and, by tracing each of these mongrels back to the two races from which they sprung, their natures will then be sufficiently ascertained. But if we want to know the relations which subsist between the first seventeen races, we must attend to their instincts, their figure, and many other circumstances. I have put into one group the shepherd's dog, the Pomeranian dog, the Siberian dog, the Lapland and Iceland dogs, because a stronger resemblance takes place between them than between any of the other kinds, and because all of them have sharp muzzles like the fox, erect ears, and an instinct which induces them to follow and protect flocks. The grey-hound, the large Danish dog, and the Irish grey-hound, have, beside their similarity in figure and length of muzzle, the same dispositions: They are fond of running, and of following horses and carriages. They have

have little ſcent, and hunt rather by the eye than the noſe. The hounds, the harriers, the ſpaniels, the terriers, and the water-dogs, are the true hunting dogs. Though they differ a little in figure, they have all thick muzzles, and the ſame inſtincts; and therefore they ought to be ranked together. The ſpaniel, for example, has been called by ſome naturaliſts, *canis aviarius terreſtris*, and the water-dog, *canis aviarius aquaticus*. The only difference in diſpoſition between theſe two dogs is, that the water-dog, with his long buſhy hair, takes the water more chearfully than the others, whoſe hair is ſmooth and ſhort. Laſtly, the ſmall Daniſh dog and the Turkiſh dog muſt be joined together, ſince the latter is ſaid to be the ſame dog with the former, only deprived of his hair by the effects of heat. There remains only the bull-dog, which, from the ſhortneſs of his muzzle, reſembles the little Daniſh dog, but differs from him ſo much, both in figure and inſtinct, as to form a particular variety. He ſeems alſo to affect a particular climate: He comes from Britain, and it is difficult to preſerve the breed in France. The mongrels that proceed from him, which are the maſtiff and the pug-dog, ſucceed better. All theſe dogs have very ſhort muzzles, little ſcent, and often ſend forth a diſagreeable ſmell. The fineneſs of the ſcent ſeems to depend more on the largeneſs than the length of the muzzle; for the grey-hound, the large Daniſh dog, and the

Iriſh

Irifh grey-hound, have lefs fcent than the hound, the harrier, the terrier, the fpaniel, or the water-dog, who have all, in proportion to their fize, fhorter, but broader muzzles, than the former.

The greater or lefs perfection of the fenfes forms not, in man, an eminent or remarkable quality; but beftows on the other animals all their merit, and produces, as a caufe, all the talents of which they are fufceptible. I mean not to enumerate all the qualities of hunting dogs. The fuperiority they poffefs over other animals, by the excellence and acutenefs of their fenfe of fmelling, is well known. But details of this kind are remotely connected with natural hiftory. Befides, the artifices and dexterity, though derived folely from Nature, employed by wild animals to conceal themfelves, or to avoid the purfuit of the dogs, are perhaps more worthy of admiration than the moft refined methodical exhibitions derived from the art of hunting.

The dog, like every other animal which produces above one or two at a time, is not perfectly formed immediately after birth. Dogs are commonly brought forth blind. The two eyelids are not fimply glued together, but fhut up with a membrane, which is torn off as foon as the mufcles of the upper eye-lid acquire ftrength fufficient to overcome this obftacle to vifion, which generally happens about the tenth or twelfth

twelfth day. At this period the bones of the head are not completed, the body and muzzle are turgid, and the whole figure is ill defined. But, in lefs than two months, they learn to ufe all their fenfes; their growth is rapid, and they foon acquire ftrength. In the fourth month, they lofe fome of their teeth, which, as in other animals, are foon replaced, and never again fall out. The number of teeth is forty-two, namely, fix cutting and two canine teeth in each jaw, and fourteen grinders in the upper and twelve in the under. But the number of grinders is not uniform, being greater or lefs in particular dogs. When very young, both males and females fquat down a little to void their urine: In the ninth or tenth month, they begin to raife the thigh when they perform this operation; and, at the fame period, they acquire the capacity of procreating. The male is ready at all times; but the female receives him only at certain fixed feafons, which generally happen twice a-year, and more frequently in winter than in fummer. The ardour of the female continues ten, twelve, and fometimes fifteen days; and it is known by external figns, which appear fome days before fhe admits the male: The parts become moift and prominent, and this phænomenon is always accompanied with a fmall flux of blood. The male difcovers the condition of the female by a peculiar fmell; but fhe feldom receives him for the firft fix or feven

 days.

days. One embrace is ſometimes ſufficient to make her conceive a great number of young; but when not reſtrained, ſhe will admit ſeveral dogs every day. She ſeems to have no predilection, except in favour of the largeſt dogs, without regarding their figure or beauty. Hence it frequently happens, that a ſmall female, who has admitted a large male, dies in bringing forth her young.

By a peculiarity in theſe animals, ariſing from the ſtructure of their organs, they are incapable of ſeparating, after conſummation, but are obliged to remain united as long as the erection ſubſiſts. The dog, like ſeveral other animals, has not only a bone in the penis, but, in the middle of the corpus cavernoſum, there is a large hollow ring, which, in time of copulation, ſwells to a conſiderable ſize. The female, on the other hand, has a larger clitoris than perhaps any other animal; beſides, in the time of coition, a large firm protuberance ariſes, and remains, perhaps, longer than that of the male, and prevents him from retiring till it ſubſides; for immediately after conſummation, he changes his poſition, in order to repoſe on his four legs; his aſpect is melancholy, and the efforts for ſeparation never proceed from the female.

The time of geſtation is nine weeks, or 63 days, ſometimes 62 or 61, but never leſs than 60. The females produce ſix, ſeven, and ſometimes even twelve puppies. The largeſt and

talleſt are more prolific than the ſmaller kinds, which often produce only four or five, and ſometimes but one or two, eſpecially at the firſt litters, which, in all animals, are always leſs numerous than the ſubſequent.

Dogs, though extremely ardent in their amours, continue to propagate during life, which is generally limited to fourteen or fifteen years, though ſome have been known to live to the age of twenty. The duration of life in the dog, as in other animals, is proportioned to the time of his growth, which is not completed in leſs than two years, and he lives fourteen. His age may be diſcovered by his teeth, which, when young, are white, ſharp, and pointed: But as he increaſes in years, they become black, blunt, and unequal. It may likewiſe be known by the hair, which turns gray on the muzzle, front, and round the eyes.

Theſe animals, which are naturally vigilant, active, and frolicſome, by being over-fed in our houſes, become ſo heavy and ſlothful, that they paſs their lives in ſleeping and eating. Their ſleep, which is almoſt perpetual, is accompanied with dreams, which is perhaps a gentle mode of exiſting. They are naturally voracious; and yet they can endure very long abſtinence. In the Memoirs of the Academy of Sciences, we have the hiſtory of a bitch, that having been forgot in a country-houſe, lived forty days, without any other nouriſhment than the wool of a

 matreſs,

matreſs, which ſhe had torn to pieces *. Water ſeems to be more neceſſary to dogs than victuals; for they drink often and very plentifully: It is even a vulgar opinion, that, when they want water too long, they become mad. It is alſo a peculiarity in dogs, that they make great efforts, and ſeem to ſuffer much pain, in voiding their excrement. This happens not, as Ariſtotle alledges †, becauſe their inteſtines become narrower in approaching the anus. On the contrary, it is certain, that, in the dog, as in other animals, the great inteſtines enlarge as they proceed downward, and that the rectum is larger than the colon. The dry temperament of this animal, and not the ſtrangulations of the colon, which are too diſtant from the rectum, is ſufficient to produce this effect.

To give a clear idea of the different kinds of dogs, of their degeneration in particular climates, and of the mixture of their races, I have ſubjoined a table, or genealogical tree, in which all theſe varieties may be eaſily diſtinguiſhed. This tree is drawn in the form of a geographical chart, preſerving as much as poſſible the poſition of the different climates to which each variety naturally belongs. The ſhepherd's dog is the root of the tree. This dog, when tranſported into Lapland, or other very cold climates, aſ-

* Hiſt. de l'Acad. des Sciences, année 1706, p. 5.

† Ariſt. de Partibus Animal. lib. ult.

ſumes an ugly appearance, and ſhrinks into a ſmaller ſize. But, in Ruſſia, Iceland, and Siberia, where the climate is leſs rigorous, and the people a little more advanced in civilization, he ſeems to be better accompliſhed. Theſe changes are occaſioned ſolely by the influence of thoſe climates, which produce no great alteration in the figure of this dog; for, in each of theſe climates, his ears are erect, his hair thick and long, his aſpect wild, and he barks leſs frequently and in a different manner, than in more favourable climates, where he acquires a finer poliſh. The Iceland dog is the only one that has not his ears entirely erect; for their extremities are a little inclined; and Iceland, of all the northern regions, has been longeſt inhabited by half civilized men.

The ſame ſhepherd's dog, when brought into temperate climates, and among a people perfectly civilized, as Britain, France, Germany, would, by the mere influence of the climate, loſe his ſavage aſpect, his erect ears, his rude, thick, long hair, and aſſume the figure of a bull-dog, the hound, and the Iriſh grey-hound. The bull-dog and Iriſh grey-hound have their ears ſtill partly erect, and very much reſemble, both in their manners and ſanguinary temper, the dog from which they derive their origin. The hound is fartheſt removed from the ſhepherd's dog; for his ears are long and entirely pendulous. The gentleneſs, docility, and even the timidity of the hound, are proofs of his great degeneration,

generation, or rather of the great perfection he has acquired by the long and careful education bestowed on him by man.

The hound, the harrier, and the terrier, constitute but one race; for it has been remarked, that, in the same litter, hounds, harriers, and terriers, have been brought forth, though the female hound had been covered by one of these three dogs only. I have joined the common harrier to the Dalmatian dog, or harrier of Bengal, because they differ only in having more or fewer spots on their coat. I have also linked the turnspit, or terrier with crooked legs, with the common terrier; because the defect in the legs of the former has originally proceeded from a disease similar to the rickets, with which some individuals had been affected, and transmitted the deformity to their descendants.

The hound, when transported into Spain and Barbary, where all animals have fine, long, bushy hair, would be converted into the spaniel and water-dog. The great and small spaniel, which differ only in size, when brought into Britain, have changed their white colour into black, and become, by the influence of climate, the great and little King Charles's dog. To these may be joined the Pyrame *, which is only a King Charles's dog, black like the others, but marked with red on the four legs, and a spot of

* This dog, though very common in Britain, has no English name.

the

the ſame colour above each eye, and on the muzzle.

The Iriſh grey-hound, tranſported to the north, is become the great Daniſh dog; and, when carried to the ſouth, was converted into the common grey-hound. The largeſt grey-hounds come from the Levant, thoſe of a ſmaller ſize from Italy; and thoſe Italian grey-hounds, carried into Britain, have been ſtill farther diminiſhed.

The great Daniſh dog, tranſported into Ireland, the Ukraine, Tartary, Epirus, and Albania, has been changed into the Iriſh grey-hound, which is the largeſt of all dogs.

The bull-dog, tranſported from Britain to Denmark, is become the little Daniſh dog; and the latter, brought into warm climates, has been converted into the Turkiſh dog. All theſe races, with their varieties, have been produced by the influence of climate, joined to the effects of ſhelter, food, and education. The other dogs are not pure races, but have proceeded from commixtures of thoſe already deſcribed. I have marked, in the table, by dotted lines, the double origin of theſe mongrels.

The grey-hound, and Iriſh grey-hound, have produced the mongrel grey-hound, called alſo the grey-hound with wolf's hair. The muzzle of this mongrel is leſs pointed than that of the true grey-hound, which is very rare in France.

The

The great Daniſh dog, and the large ſpaniel, have produced the Calabrian dog, which is a beautiful animal, with long buſhy hair, and as large as the Iriſh grey-hound.

The ſpaniel and terrier have produced the dog called *Burgos*.

From the ſpaniel and little Daniſh dog, has proceeded the lion-dog, which is now very rare.

The dogs with long, fine, criſped hair, called the *Bouffe* dogs, and which are larger than the water-dog, proceed from the ſpaniel and water-dog.

The little water-dog comes from the water-dog and ſmall ſpaniel.

From the bull-dog and Iriſh grey-hound, proceeds a mongrel called the *maſtiff*, which is larger than the bull-dog, and reſembles the latter more than the Iriſh grey-hound.

The pug-dog proceeds from the bull-dog and ſmall Daniſh dog.

All theſe dogs are ſimple mongrels, and are produced by the commixture of two pure races. But there are other dogs, called *double mongrels*, becauſe they proceed from the junction of a pure race with a mongrel.

The baſtard pug-dog is a double mongrel, from a mixture of the pug-dog with the little Daniſh dog.

The Alicant dog is alſo a double mongrel, proceeding from the pug-dog and ſmall ſpaniel.

The

The Maltefe, or lap-dog, is a double mongrel, produced between the fmall fpaniel and little water-dog.

Laftly, there are dogs which may be called *triple mongrels*, becaufe they are produced by two mixed races. Of this kind are the Artois and Iflois dogs, which are produced by the pug-dog and the baftard pug-dog; to which may be added the dogs called *ftreet-dogs*, which refemble no particular kind, becaufe they proceed from races which have previoufly been feveral times mixed.

SUPPLEMENT.

M. de Mailly, of the academy of Dijon, well known by feveral ingenious performances, communicated to me a fact, which merits a place in the Natural Hiftory of the dog. The following is an extract of his letter upon this fubject, dated October 6, 1772.

'The curate of Norges, near Dijon, had a 'bitch, which, without either having ever been 'pregnant, or delivered of puppies, had all the 'fymptoms which characterife thefe two ftates. 'She came in feafon at the ufual period; but 'never had any connections with a male. 'When the common term of geftation was 'finifhed, her paps were diftended with milk, 'without

'without being irritated by any particular treat-
'ment; for it is poſſible to bring milk into the dugs of animals by frequently chafing them. But, in this caſe, every thing was the effect of Nature; and this bitch ſuckled ſome young puppies with which ſhe was furniſhed, and for whom ſhe diſcovered as much tenderneſs and attention, as if ſhe had been their real mother. All this I ſaw with my eyes. But, what is ſtill more ſingular, this ſame bitch, about three years ago, ſuckled two young cats, one of which participated ſo much of the nature of its nurſe, that its cries had more reſemblance to the barking of a dog, than to the mewing of a cat.'

If the production of milk, without impregnation, were more frequent among quadrupeds, it would make them analogous to female birds, which lay eggs without the aſſiſtance of the male.

OF THE VARIETIES OF DOGS.

A few years ago, at the fair of St. Germain, there was a Siberian dog, which appeared to differ ſo much from that repreſented in Plate XXIX. as to merit a ſhort deſcription. It was covered with long hair, hanging almoſt down to the ground. At firſt ſight, it reſembled a large lion-dog; but its ears were erect, and much larger. Its

Its colour was all white, and its length, from the nose to the extremity of the body, was 21 inches and a half; and its height behind was 11 inches nine lines, and 11 inches three lines before. The eye was of a brown chesnut colour, and the end of the nose, as well as round the nostrils and mouth, were black. The ears were bushy, of a whitish yellow within, and yellow on the edges and extremities. The long hair of its head partly concealed the eyes, and fell down upon the nose. Its toes and claws were also hid by the hair of its legs. The tail, which turned up like that of the Pomeranian dog, was covered with hair about seven or eight inches long. Of all dogs, this is certainly the roughest furred.

Other dogs, brought to Paris by the Russians, which they called *Siberian dogs*, belonged to a very different race from the preceding. Both male and female were about the size of an ordinary grey-hound. The nose was sharp, the ears half erect, but bended a little in the middle. They were not slender like the grey-hound, but round and full below the belly. Their tail was about eight or nine inches in length, pretty thick, and obtuse at the extremity. Their colour was black, without any mixture of white hairs; but the female had a gray tuft on the middle of the head, and the male a tuft of the same colour at the end of the tail. They were troublesome with their caresses, and so voracious, that they could never be satiated. They were, at

at the ſame time, inſufferably dirty, and perpetually roaming about in queſt of food. Their legs were tolerably handſome; but their feet were large and broad, and their toes united by a membrane. Their voice was very ſtrong; they had no inclination to bite; they careſſed every perſon indiſcriminately; and their vivacity was inexpreſſible*. From this deſcription, it appears, that theſe pretended Siberian dogs are of the ſame race with that I have called the Iceland dog, whoſe figure is engraven Plate XXX. which exhibits a number of the characters mentioned in the above delineation.

'I have made ſome inquiry,' ſays Mr. Colinſon, 'concerning the dogs of Siberia. Thoſe 'which draw ſleds and carts are of a middle ſize: 'Their noſe is ſharp, and their ears long and 'erect. They carry their tail bended, ſome of 'them like the wolf, and others like the fox; 'and it is certain, that they copulate with wolves 'and foxes. I ſee, from your experiments, that, 'when theſe animals are confined, they will not 'intermix; but when at full liberty, they wil'lingly come together. With regard to the dog 'and wolf, I myſelf have ſeen them couple in 'England. But I have never met with any per'ſon who ſaw dogs and foxes intermingle. 'However, from a kind I ſaw produced from a 'bitch, which had lived at freedom in the woods,

* Extracted from a letter of M. Paſumot of the academy of Dijon, to M. de Buffon, dated March 2, 1775.

'I have

'I have no doubt that ſhe had been impregnated 'by a fox. The peaſants know this ſpecies, and 'diſtinguiſh it by the name of *fox-dogs*.'

Moſt of the Greenland dogs are white; but ſome of them are black, with very buſhy hair. They rather may be ſaid to howl than bark; and they are ſtupid, and unfit for every ſpecies of hunting. They ſerve, however, for dragging ſleds, to which they are yoked by fours and ſixes. The Greenlanders eat the dog's fleſh, and make garments of his ſkin *.

The dogs of Kamtſchatka are rude, and half ſavage, like their maſters. They are commonly black or white, and more nimble and active than our dogs. They are great eaters of fiſh, and are uſed for drawing ſleds. In ſummer, they have their liberty; but are collected together in the month of October, for the purpoſe of drawing the ſleds; and, during winter, they are fed with a kind of paſte compoſed of fiſh, which is allowed to ferment in a ditch, and given to them half boiled †.

From theſe facts, it appears, that the Greenland and Kamtſchatkan dogs, and perhaps thoſe of other northern regions, have a greater reſemblance to the Iceland dog, than to any of the other races; for the above deſcription of the two Ruſſian dogs, as well as the notices concerning thoſe of Greenland and Kamtſchatka, correſpond

* Hiſt. des Voyages, tom. xix. p. 39. † Ibid. p. 39.

very

very well, and may be equally applied to our Iceland dog.

Though we have deſcribed all the varieties which we could collect, there are ſtill ſome which could not be procured. For example, there is a race of wild dogs, of which I have ſeen two individuals, but had not an opportunity of either deſcribing or delineating them. The ingenious and learned M. Aubry, curate of Saint Louis, has often furniſhed us with animals of which he had no knowledge. He informs us, that, a few years ago, he ſaw a dog, nearly of the ſize of a ſpaniel, which had long hair, and a large beard on its chin. This dog was produced from parents of the ſame race with thoſe which had formerly been ſent to Louis XIV. by M. le Comte de Toulouſe. M. le Comte de Laſſai had alſo ſome of theſe dogs; but I know not what has become of this ſingular race.

With regard to the wild dogs, among which there are different races, as well as among the domeſtic kinds, I have little to add to what I have ſaid in my original work. M. le Vicomte de Querhoënt has been ſo obliging as to communicate to me a note with regard to the wild dog found in the environs of the Cape of Good Hope. He remarks, 'That, at the Cape, there are numerous packs of wild dogs, as large as our largeſt kinds, whoſe ſkin is marked with various colours. They have erect ears, run with great ſwiftneſs, and have no fixed reſidence.

'They

‘ They deſtroy an incredible number of deer.
‘ They are ſeldom ſlain, and very difficult to
‘ take in ſnares; for they have an averſion to
‘ approach any thing that has been touched by
‘ man. As their young are ſometimes met with
‘ in the woods, attempts have been made to
‘ render them domeſtic; but they are ſo large,
‘ and ſo ferocious, that theſe attempts have al-
‘ ways been abortive.’

Plate XXVI.

A. Bell Sculpt.

IRISH GRE-HOUND

Plate XXVII.

DANISH DOG

Plate XXVIII.

A Bell Sculp.t

COMMON GRE-HOUND

Plate XXIX.

A Bell Sculp^t.

SHEPHERDS DOG

Plate XXX.

A. Bell Sculpt.

WOLF or POMERANIAN DOG

Plate XXXI.

A. Bell Sculp.t

SIBERIAN DOG

Plate XXXII.

A Bell Sculpt

ICELAND DOG

Plate XXXIII.

HOUND

Plate XXXIV.

HARRIER

Plate XXXV.

J. Bell Sculp^t.

DALMATIAN DOG or HARRIER of BENGAL

Plate XXXVI.

TURNSPIT

A Bell Sculp.t

VARIETY of the TURNSPIT

Plate XXXVII.

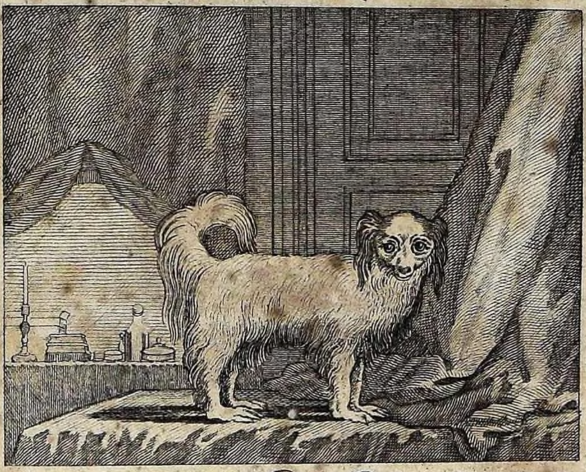
A Bell Sculp.t

MONGRAL HOUND

Plate XXXVIII.

GREAT WATER DOG.

Plate XXXIX.



SPANIEL.

A. Bell Sculp.

LESSER WATER DOG.

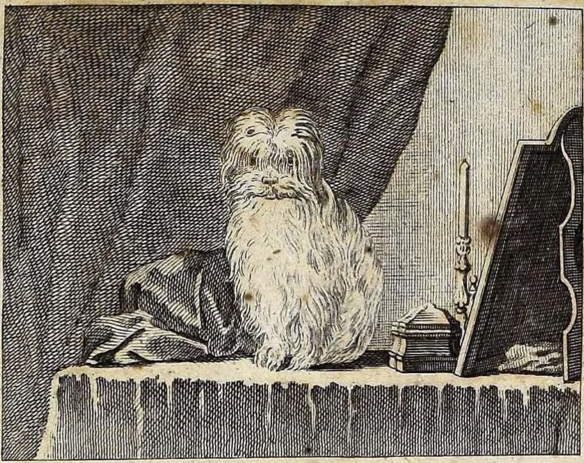
Plate XL.

KING CHARLES'S DOG

A Bell Sculp[t]

PYRAME DOG

Plate XLI.

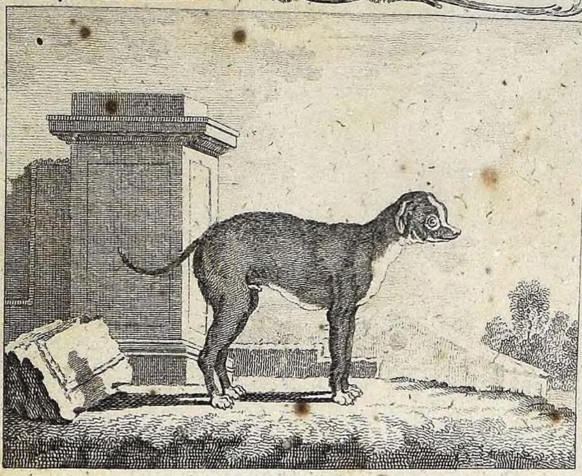


SHOCK DOG

A. Bell Sculpt.

LION DOG

Plate XLII.



SMALL DANISH DOG

A Bell Sculp.

BASTARD PUG DOG

Plate XLIII.

NAKED OR TURKISH DOG

A Bell Sculp.t

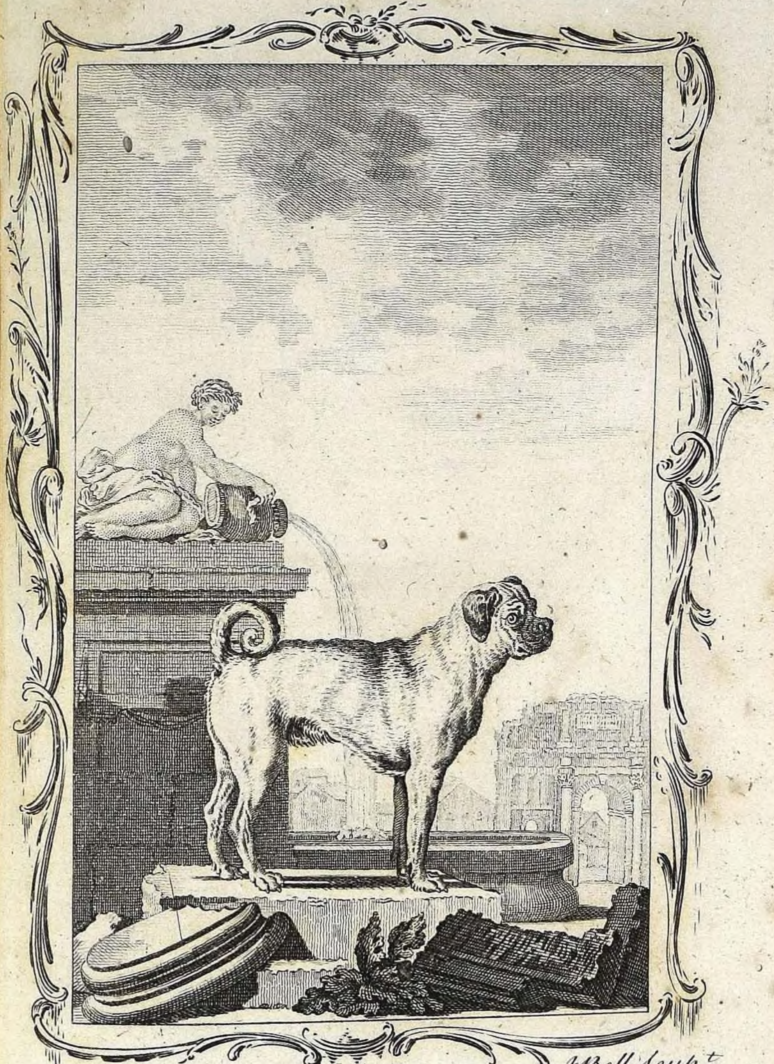
MONGREL or TURKISH DOG

Plate XLIV.

A. Bell Sculp^t

BULL DOG

Plate XLV.



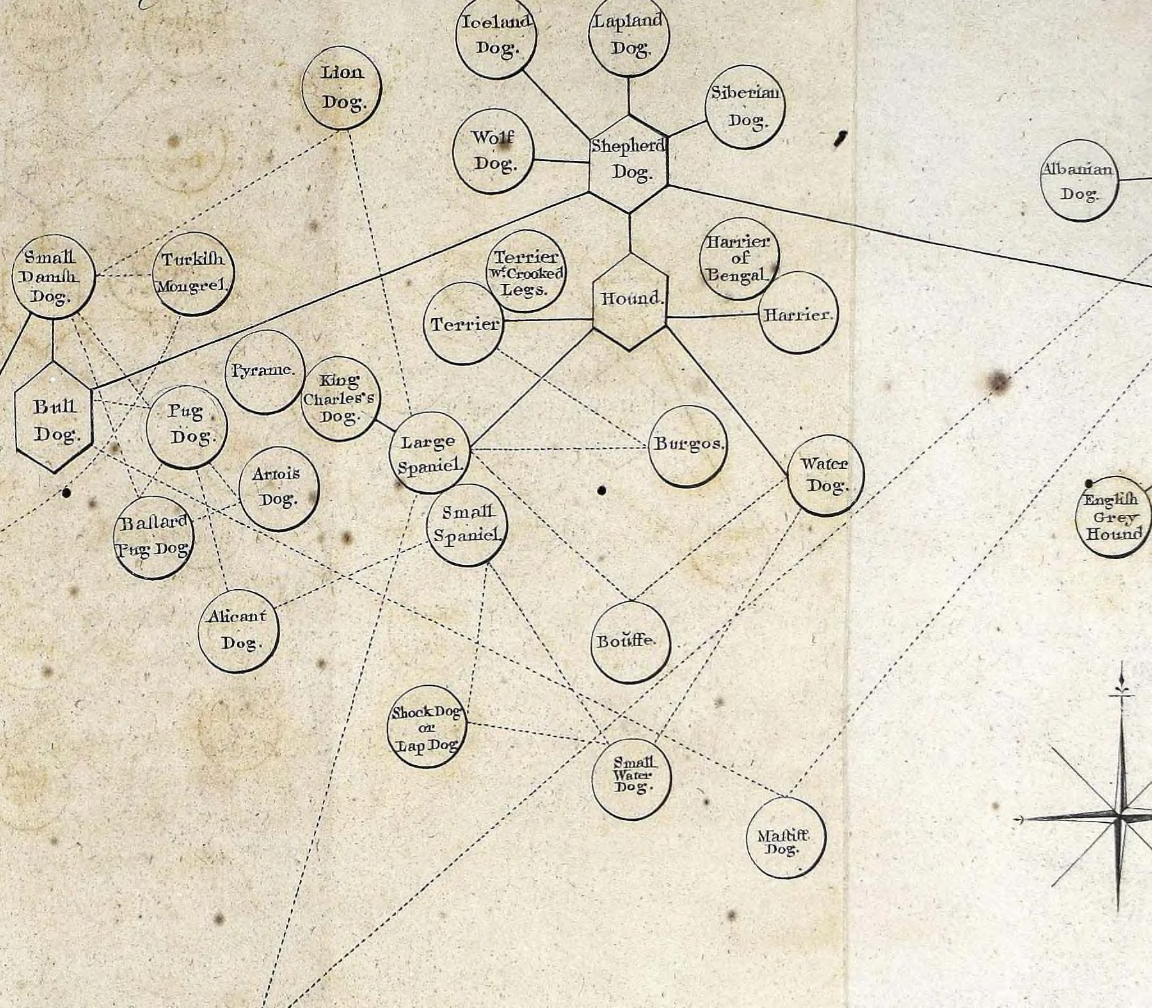
A Bell Sculp.t

Pug Dog

Plate XLVI.

A Bell Sculp.

MASTIFF DOG



Iceland Dog.
Lapland Dog.
Lion Dog.
Siberian Dog.
Wolf Dog.
Shepherd Dog.
Albanian Dog.
Small Danish Dog.
Turkish Mongrel.
Terrier Wt. Crooked Legs.
Harrier of Bengal.
Hound.
Terrier
Harrier.
Bull Dog.
Pyrame.
King Charles's Dog.
Pug Dog.
Large Spaniel.
Burgos.
Water Dog.
Artois Dog.
English Grey Hound
Bastard Pug Dog.
Small Spaniel.
Alicant Dog.
Bouffe.
Shock Dog or Lap Dog.
Small Water Dog.
Mastiff Dog.

THE CAT*.

THE cat is an unfaithful domeſtic, and kept only from the neceſſity we find of oppoſing him to other domeſtics ſtill more incommodious, and which cannot be hunted; for we value not thoſe people, who, being fond of all brutes, fooliſhly keep cats for their amuſement. Though theſe animals, when young, are frolickſome and beautiful, they poſſeſs, at the ſame time,

* The cat has ſix cutting teeth, and two canine in each jaw; five toes before, and four behind; ſharp hooked claws, lodged in a ſheath, that may be exerted or drawn in at pleaſure; a round head, ſhort viſage, and rough tongue. The wild cat has long ſoft hair, of a yellowiſh white colour, mixed with gray; the gray is diſpoſed in ſtreaks, pointing downwards, and riſing from a duſky liſt, which runs from head to tail, along the middle of the back; the tail is marked with alternate bars of black and white, and its tip, and the hind part of the legs, are black. It is three times as large as the domeſtic cat, and very ſtrongly made; *Pennant. Synop. of Quad.* p. 183.

Charact. gen. Dentes primores æquales; molares terni. Lingua retrorſum aculeata. Ungues retractiles. *Charact. ſpec.* Felis catus, cauda elongata fuſco-annulata, corpore faſciis nigricantibus; dorſalibus longitudinalibus tribus; lateralibus ſpiralibus; *Lyn. Syſt. Nat.* p. 62.

Catus ſylveſtris; *Geſner. Quad.* 325.

Catus ſylveſtris ferus vel feralis, eques arborum; *Klein. Quad.* p. 75.

Felix ex fuſco, flavicante, et albido, variegatis veſtita; cauda annulis alternatim nigris, et ex ſordide albo flavicantibus cincta; *Briſſon. Quad.* 192.

time, an innate malice, and perverſe diſpoſition, which increaſe as they grow up, and which education learns them to conceal, but not to ſubdue. From determined robbers, the beſt education can only convert them into flattering thieves; for they have the ſame addreſs, ſubtlety, and deſire of plunder. Like thieves, they know how to conceal their ſteps and their deſigns, to watch opportunities, to catch the proper moment for laying hold of their prey, to fly from puniſhment, and to remain at a diſtance till ſolicited to return. They eaſily aſſume the habits of ſociety, but never acquire its manners; for they have only the appearance of attachment or friendſhip. This diſingenuity of character is betrayed by the obliquity of their movements, and the duplicity of their eyes. They never look their beſt benefactor in the face; but, either from diſtruſt or falſeneſs, they approach him by windings, in order to procure careſſes, in which they have no other pleaſure than what ariſes from flattering thoſe who beſtow them. Very different from that faithful animal the dog, whoſe ſentiments totally centre in the perſon and happineſs of his maſter, the cat appears to have no feelings which are not intereſted, to have no affection that is not conditional, and to carry on no intercourſe with men, but with the view of turning it to his own advantage. By theſe diſpoſitions, the cat has a greater relation to man

than

than to the dog, in whom there is not the ſmalleſt mark of inſincerity or injuſtice.

The form and temperament of the cat's body perfectly accord with his temper and diſpoſitions. He is jolly, nimble, dexterous, cleanly, and voluptuous. He loves eaſe, and chooſes the ſofteſt and warmeſt ſituations for repoſe. He is likewiſe extremely amorous, and, what is ſingular in this animal, the female ſeems to be more ardent than the male. She not only invites and goes in queſt of him, but announces, by loud cries, the fury of her paſſion, or rather the preſſure of her neceſſities; and, when the male diſdains her, or flies from her, ſhe purſues, tears, and, though their embraces are always accompanied with the moſt acute pain, compels him to comply with her deſires. This paſſionate ardour of the female continues only nine or ten days, and it happens generally twice a-year, though often thrice, and even four times. The period of geſtation is 55 or 56 days, and four or five are commonly produced at a litter. As the male has an inclination to devour the young, the female carefully conceals them; and, when apprehenſive of a diſcovery, ſhe takes them up, one by one, in her mouth, and hides them in holes, and in inacceſſible places. After ſuckling them a few weeks, ſhe preſents them with mice, or young birds, to learn them to eat fleſh. But, by an unaccountable caprice, theſe ſame careful, tender, and affectionate mothers, ſome-

times assume an unnatural species of cruelty, and devour their own offspring.

Young cats are gay, vivacious, and frolicksome, and, if nothing was to be apprehended from their claws, would afford excellent amusement to children. But their toying, though always light and agreeable, is never altogether innocent, and is soon converted into habitual malice. As their talents can only be exerted with advantage against small animals, they lie in wait, with great patience and perseverance, to seize birds, mice, and rats, and, without any instruction, become more expert hunters than the best trained dogs. Naturally averse to every kind of restraint, they are incapable of any system of education. It is related, however, that the Greek Monks of the island of Cyprus had trained cats to hunt and destroy serpents, with which that island was much infested *. But this hunting must rather be ascribed to their general desire of slaughter, than to any kind of tractability or obedience; for they delight in watching, attacking, and destroying all weak animals indiscriminately, as birds, young rabbits, hares, rats, mice, bats, moles, frogs, toads, lizards, and serpents. They have not that docility and fineness of scent, for which the dog is so eminently distinguished. They hunt by the eye only: Neither do they properly pursue, but lie in wait, and attack animals by surprise; and, after sporting with them,

* Descript. des Isles de l'Archipel, par Dapper, p. 51.

and tormenting them for a long time, they at last kill them without any neceſſity, and even when well fed, purely to gratify their ſanguinary appetite.

The moſt obvious phyſical cauſe of their watching and catching other animals by ſurpriſe, proceeds from the advantage they derive from the peculiar ſtructure of their eyes. In man and moſt other animals, the pupil is capable of a certain degree of contraction and dilatation. It enlarges a little when the light is faint, and contracts when the light is too ſplendid. But, in cats and night birds, as owls, &c. the contraction and dilatation are ſo great, that the pupil, which is round in the dark, becomes, when expoſed to much light, long and narrow like a line. Hence theſe animals ſee better in the night than in the day. The pupil of the cat during the day is perpetually contracted, and it is only by a great effort that he can ſee with a ſtrong light. But, in the twilight, the pupil reſumes its natural roundneſs, the animal enjoys perfect viſion, and takes advantage of this ſuperiority to diſcover and ſurpriſe his prey.

Though cats live in our houſes, they are not entirely domeſtic. Even the tameſt cats are not under the ſmalleſt ſubjection, but may rather be ſaid to enjoy perfect liberty; for they act to pleaſe themſelves only; and it is impoſſible to retain them a moment after they chooſe to go off. Beſides, moſt cats are half wild. They know not

not their maſters, and only frequent barns, offices, or kitchens, when preſſed with hunger.

Though greater numbers of them are reared than of dogs, as they are ſeldom ſeen, their number makes leſs impreſſion on us. They contract a ſtronger attachment to our houſes than to our perſons. When carried to the diſtance of a league or two, they return of their own accord, probably becauſe they are acquainted with all the retreats of the mice, and all the paſſages and outlets of the houſe, and becauſe the labour of returning is leſs than that which would be neceſſary to acquire the ſame knowledge in a new habitation. They have a natural antipathy at water, cold, and bad ſmells. They are fond of baſking in the ſun, and of lying in warm places. They are alſo fond of perfumes, and willingly allow themſelves to be taken and careſſed by perſons who carry aromatic ſubſtances. They are ſo delighted with valerian root, that it ſeems to throw them into a tranſport of pleaſure. To preſerve this plant in our gardens, we are under the neceſſity of fencing it round with a rail; for the cats ſmell it at a diſtance, collect about it in numbers, and, by frequently rubbing, and paſſing and repaſſing over it, they ſoon deſtroy the plant.

Cats require fifteen or eighteen months before they come to their full growth. In leſs than a year, they are capable of procreating, and retain this faculty during life, which extends not

beyond

beyond nine or ten years. They are, however, extremely hardy and vivacious, and are more nervous than other animals which live longer.

Cats eat ſlowly, and with difficulty: Their teeth are ſo ſhort and ill-placed, that they can tear, but not grind their food. Hence they always prefer the moſt tender victuals, as fiſhes, which they devour either raw or boiled. They drink frequently; their ſleep is light; and they often aſſume the appearance of ſleeping, when they are only meditating miſchief. They walk ſoftly, and without making any noiſe. As their hair is always clean and dry, it is eaſily electrified, and the ſparks become viſible when it is rubbed acroſs with the hand in the dark. Their eyes alſo ſparkle in the dark like diamonds, and ſeem to throw out, in the night, the light they imbibe during the day.

The wild cat couples with the domeſtic kind; and, conſequently, they belong to the ſame ſpecies. It is not uncommon to ſee both males and females quit their houſes in the ſeaſon of love, go to the woods in queſt of wild cats, and afterwards return to their former habitations. It is for this reaſon that ſome domeſtic cats ſo perfectly reſemble the wild cat. The only real difference is internal; for the inteſtines of the domeſtic cat are commonly much longer than thoſe of the wild cat. The latter, however, is larger and ſtronger than the domeſtic kind; his lips are always black; his ears are alſo ſtiffer; his tail

tail larger, and his colours more conſtant. In this climate there is only one ſpecies of wild cat; and it appears from the teſtimony of travellers, that this kind is found in all climates, without being ſubject to much variety. They exiſted in America before its diſcovery by the Europeans. A hunter brought one of them to Chriſtopher Columbus *, which was of an ordinary ſize, of a browniſh gray colour, and having a very long and ſtrong tail. They were likewiſe found in Peru †, though not in a domeſtic ſtate, and alſo in Canada ‡, in the country of the Illinois, &c. They have been ſeen in many places of Africa, as in Guiney ‖, and the Gold Coaſt; at Madagaſcar §, where the natives keep them in a domeſtic ſtate; and at the Cape of Good Hope **, where M. Kolbe ſays there is likewiſe a wild kind, of a blue colour; but they are not numerous. Theſe blue, or rather ſlate coloured cats, are alſo found in Aſia. 'In Perſia,' ſays Pietro della Valle ††, 'there is a ſpecies of 'cats which properly belong to the province of 'Chorazan. Their figure and ſize are the ſame 'with thoſe of the common cat. Their beauty 'conſiſts in the colour of their hair, which is 'gray, and uniformly the ſame over the whole 'body, except that it is darker on the back

* Vie de Chriſt. Columb. part ii. p. 167.

† Hiſt. des Incas, tom. ii. p. 121.

‡ Hiſt. de Nouvelle France, par Charlevoix, tom. iii p. 407.

‖ Prevot, tom. iv. p. 230.

§ Relation de François Couche, p. 225.

** Deſcript. du Cap. par Kolbe, p. 49.

†† Voyage, tom. v. p. 98.

'and

'and head, and clearer on the breaſt and belly, 'where it approaches to whiteneſs, with that 'agreeable mixture of clare-obſcure, to uſe the 'language of painters, which has always a 'wonderful effect. Beſides, the hair is fine, 'ſhining, ſoft as ſilk, and ſo long, that, though 'not frizled, it forms ringlets in ſome parts, 'and particularly under the throat. Theſe cats 'are among other cats, what the water-dog is 'among other dogs. The moſt beautiful part 'of the body is the tail, which is very long, and 'covered with hair five or ſix inches in length. 'They extend and turn it upon their backs, like 'the ſquirrel, the point reſembling a plume of 'feathers. They are very tame; and the Por-'tugueſe have brought them from Perſia into 'India.' The ſame author adds, that he had four couple of theſe cats, which he intended to bring to Italy. From this deſcription it appears, that the Perſian cats reſemble, in colour, thoſe we call Chartreux cats, and that, except in colour, they have a perfect reſemblance to the cat of Angora. It is probable, therefore, that the cat of Chorazan in Perſia, the cat of Angora in Syria, and the Chartreux cat, conſtitute but one race, whoſe beauty proceeds from the particular influence of the climate, as the Spaniſh cats, which are red, black, and white, owe their beauty to the climate of Spain. It may be remarked in general, that, of all climates on the habitable parts of the globe, thoſe of Spain and

Syria

Syria are moſt favourable to the production of beautiful varieties in natural objects. In Spain and Syria, the ſheep, the goats, the dogs, the cats, the rabbits, &c. have the fineſt wool, the moſt beautiful and longeſt hair, and the moſt agreeable and variegated colours. Theſe climates, it ſhould appear, ſoften Nature, and embelliſh the form of all animals.

The wild cat, like moſt other animals in a ſavage ſtate, has coarſe colours, and hard hair. But, when rendered domeſtic, the hair ſoftens, the colours vary; and, in the favourable climates of Chorazan and Syria, the hair grows long, fine, and buſhy; all the colours become more delicate; the black and red change into a ſhining brown, and the grayiſh brown is converted into an aſh-coloured gray. By comparing the wild cat with the Chartreux cat, it will be found, that they differ only in this degradation in the ſhades of colour. As theſe animals have always more or leſs whiteneſs on their ſides and belly, it is apparent, that, to produce cats entirely white and with long hair, like the cats of Angora, nothing farther is requiſite, than to join thoſe who have the greateſt quantity of white, as has been done to procure white rabbits, dogs, goats, ſtags, &c. In the Spaniſh cat, which is only another variety of the wild kind, the colours, inſtead of being weakened by uniform ſhades, as in the cat of Syria, are exalted, and have become more lively and brilliant; the yellow is changed

changed into red, the brown into black, and the gray into white. These cats, though transported into America, have not degenerated, but preserve their beautiful colours. 'In the Antilles,' says Father Tertre, 'there are a number of cats, 'which have probably been brought from Spain. 'They are mostly marked with red, white, and 'black. Several of our countrymen, after eating the flesh, carry the skins of these cats into 'France. When we first arrived at Guadaloupe, 'the cats were so accustomed to feed on partridges, pigeons, thrushes, and other small 'birds, that they disdained the rats; but, when 'the game was much diminished, they attacked 'the rats with great fury *,' &c. In general, cats are not subject, like dogs, to degeneration, when transported into warm climates. 'The 'European cats,' Bosman remarks, 'when carried to Guiney, change not, like the dogs, but 'preserve their original figure †,' &c. Their nature is indeed more constant; and, as their domestic state is neither so complete, so universal, nor, perhaps, so ancient as that of the dog, it is not surprising that they are also less variegated. Our domestic cats, though they differ in colour, form no distinct races. The climates of Spain and Syria have alone produced permanent varieties: To these may be added the climate of Pe-chi-ly in China, where the cats have long

* Hist. Gen. des Antilles, par le P. du Tertre, tom. ii. p. 306.
† Voyage de Guinée, par Bosman, p. 2403.

hair

hair and pendulous ears, and are the favourites of the ladies *. These domestic cats with pendulous ears, of which we have full descriptions, are still farther removed from the wild and primitive race, than those whose ears are erect.

We shall here terminate the history of the cat, and at the same time that of domestic animals. The horse, the ass, the ox, the sheep, the goat, the hog, the dog, and the cat, are our only domestic animals. We add not to this list the camel, elephant, rain-deer, &c. which, though domestic in other countries, are strangers to us; and we shall not treat of foreign animals, till we have given the history of the wild animals which are natives of our own climate. Besides, as the cat may be considered as only half-domestic, he forms the shade between domestic and wild animals; for we ought not to rank among domestics those troublesome neighbours, mice, rats, and moles, which, though they inhabit our houses and gardens, are perfectly wild and free. Instead of being attached or submissive to man, they fly from him, and preserve entire, in their obscure retreats, their manners, their habits, and their liberty.

We have seen, in the history of each domestic animal, the great influence which education, shelter, and the careful hand of man, have upon the manners, dispositions, and even the form of

* Hist. Gen. des Voyages, par M. l'Abbé Prevot, tom. vi. p. 10.

animals.

animals. We have ſeen, that theſe cauſes, joined to the effects of climate, modify and change the ſpecies to ſuch a degree, as to make them very different from what they are in a natural ſtate, and, at the ſame time, introduce ſuch changes among individuals of the ſame ſpecies, that they would be regarded as different animals, if they preſerved not the faculty of intermixing and producing fertile individuals, which is the only eſſential characteriſtic of ſpecies. We have ſeen, that the different races of domeſtic animals obſerve, in different climates, nearly the ſame order as the races of the human kind; that, like men, they are ſtronger, larger, and more courageous in cold countries, milder and more civilized in temperate climates, and weaker and more deformed in very warm regions; and that, in temperate climates, and among poliſhed people, the varieties of each ſpecies are moſt numerous and diverſified, and exhibit the moſt evident marks of the antiquity of their ſlavery: Pendulous ears, variegated colours, fine long hair, are effects produced by their long continuance in a domeſtic ſtate. Moſt wild animals have erect ears. The ears of the wild boar are erect and ſtiff; but thoſe of the domeſtic hog are inclined and half-pendulous. Among the Laplanders, the ſavages of America, the Hottentots, the Negroes, and other unpoliſhed people, all the dogs have erect ears; but they are generally ſoft and pendulous in Spain, France, Britain,

Britain, Turkey, Perſia, China, and other civilized nations. The ears of the domeſtic cat are not ſo ſtiff and erect as thoſe of the wild kind; and in China, a nation which has been very long in a ſtate of civilization, and whoſe climate is mild, there are cats with pendulous ears. It is for this reaſon, that the goat of Angora, whoſe ears are pendulous, ſhould be regarded as a variety fartheſt removed from the natural ſtate. The ſtrong and marked influence of the climate of Syria, joined to the domeſtic condition of theſe animals among a people very anciently civilized, would, in the progreſs of time, produce this variety, which cannot be preſerved in any other climate. In the goats of Angora, brought forth in France, the ears are neither ſo long nor ſo pendulous as in thoſe of Syria, and would probably, after a certain number of generations, reſume the ears and coarſe hair of our common goat.

SUPPLEMENT.

BY miſtaking ſome of my expreſſions in the above hiſtory of the cat, I find it has been imagined that I had denied him altogether the power of ſleeping. I always knew that cats ſlept, but not ſo profoundly as I now find they ſometimes do. On this ſubject M. Paſumot, of the academy

academy of Dijon, an able naturaliſt, communicated to me a letter, of which the following is an extract.

'Permit me, Sir, to remark, that, in your 'work, you ſeem to deny the cat the power of 'ſleeping. I aſſure you, that, though he ſleeps 'ſeldom, his ſleep is ſo profound, that it is a 'ſpecies of lethargy, which I have obſerved at 'leaſt ten times in different cats. When young, 'a favourite cat lay every night in bed at my 'feet. One night, I puſhed him from me; but 'I was ſurpriſed to find him ſo heavy, and at 'the ſame time ſo immoveable, that I believed 'him to be dead. I pulled him ſmartly with 'my hand; but I felt no motion. I then toſſ'ed him about, and, by the force of the agita'tion, he began ſlowly to awake. This pro'found ſleep, and difficulty of wakening, I have 'frequently obſerved. It generally happened in 'the night, having only once obſerved it in the 'day; and this was after peruſing what you have 'ſaid concerning the ſleep of theſe animals. I 'know another gentleman who has likewiſe 'often ſeen cats ſleeping in this profound manner. 'He tells me, that, when cats ſleep during the 'day, it is always at the time of the greateſt 'heat, and particularly before the approach of 'ſtormy weather.'

M. de Leſtrée, a merchant of Chalons in Champagne, who is accuſtomed to allow cats to lie in his bed, remarks:

1. 'That, when these animals purr, when
'they are tranquil, and appear to be sleeping,
'they sometimes make a long inspiration, which
'is followed by a strong expiration; and that,
'at this period, their breath has an odour which
'greatly resembles that of musk.

2. 'That, when surprised by a dog, or any
'other object which suddenly alarms them, they
'make a kind of hissing noise, which is accom-
'panied with the same odour. This is not
'peculiar to the males; for I have remarked the
'same thing of both sexes, and of cats of all
'ages and colours.'

From these facts, M. de Lestrée seems to think, that, in the breast or stomach of the cat, there are some vessels filled with an aromatic substance, the perfume of which issues from the mouth. But we discover nothing of this kind from anatomy.

I formerly remarked, that, in China, there were cats with pendulous ears. This variety is not found any where else, and perhaps it is an animal of a different species; for travellers, when mentioning an animal called *Sumxu*, which is entirely domestic, say, that they can compare it to nothing but the cat, with which it has a great resemblance. Its colour is black or yellow, and its hair very bright and glittering. The Chinese put silver collars about the necks of these animals, and render them extremely familiar. As they are not common, they give a high price, both

Plate XLVIII.

A Bell sculp

WILD CAT.

Plate XLIX.

A Bell Sculp^t

DOMESTIC CAT

Plate L.

A Bell Sculp.t

SPANISH CAT

Plate LI.

A Bell Sculpt

CHARTREUX CAT

Plate LII.

A Bell Sculp.t

CAT of ANGORA

both on account of their beauty, and becaufe they deftroy rats *.

At Madagafcar there are alfo wild cats rendered domeftic. Moft of them have twifted tails; and they are called *Saca* by the natives. But thefe wild cats are of the fame fpecies with the domeftic kind; for they intermix and produce †.

Another variety has been obferved. In our own climate, cats are fometimes produced with pencils of hair at the points of their ears. M. de Seve writes me (Nov. 16. 1773), that a young cat was brought forth in his houfe at Paris, of the fame race with that we have called the *Spanifh cat*, with pencils at the points of its ears, though neither of the parents had any pencils. In a few months the pencils of this cat were as large in proportion to its fize, as thofe of the Canadian lynx.

The fkin of an animal, which greatly refembles that of our wild cat, has been lately fent me from Cayenne. It is called *Haïra* in Guiana, where they eat its flefh, which is white and good; and hence we may prefume, that, however fimilar to the cat, it belongs to a different fpecies. But, perhaps, the name *haïra* is improperly applied; for it is probably the fame with *taïra*, which is not a cat, but a fmall martin, taken notice of in the laft volume of this work.

* Journal des Sçavans, tom. i. p. 261. † Voy. de Flacourt, p. 152.

OF WILD ANIMALS.

IN the hiſtory of man, and of domeſtic animals, we have ſeen Nature under reſtraint, ſeldom perfect, often changed and deformed, and perpetually encompaſſed with fetters, or loaded with foreign ornaments. She is now to appear naked and adorned with ſimplicity alone; but her attractions will be heightened by native beauty, by the freedom of her demeanour, the ſprightlineſs of her movements, and other marks of true dignity and independence. We are to ſee her traverſing the ſurface of the earth, like a ſovereign, dividing her empire among the animals, aſſigning to each his proper element, climate, and ſubſiſtence. We ſhall ſurvey her in the foreſts, in the waters, and in the plains, dictating her ſimple but immutable laws, impreſſing upon every ſpecies indelible characters, diſpenſing her bounty with equity, compenſating evil with good, giving to ſome ſtrength and courage, accompanied with hunger and voracity; to others gentleneſs, temperance, and agility, attended with reſtleſſneſs and timidity; and to all liberty, uniform manners, and ardour in love, which is always eaſily gratified, and always followed with a happy fecundity.

Love and liberty are the moſt ineſtimable gifts which Nature has to beſtow. Do theſe animals we call *wild*, becauſe they are not ſubject to our caprice, require more to render them completely happy? But they alſo enjoy a perfect equality; they are neither the ſlaves nor the tyrants of each other. The individual has no occaſion, like man, to dread the reſt of his ſpecies. They have peace among themſelves, and war never approaches them, but from ſtrangers, or from man. They have, therefore, great reaſon to fly from the human race, to conceal themſelves from our obſervation, to take up their abode in ſolitudes remote from the habitations of men, to provide for their ſafety by all the reſources afforded them by inſtinct, and to withdraw themſelves from the power of man, uſing, in every manner, that liberty beſtowed on them by Nature, at the ſame time that ſhe has given them the deſire of independence.

Some animals, and they are the moſt gentle, innocent, and tranquil, content themſelves with retiring, and paſſing their lives in our fields. Thoſe which are more fierce and ſuſpicious, hide themſelves in the deepeſt receſſes of the foreſt. Others, as if they knew there was no ſafety on the ſurface of the earth, dig ſubterraneous abodes, take refuge in caverns, or gain the ſummits of the moſt inacceſſible mountains. Laſtly, the moſt ferocious and formidable kinds, inhabit deſerts only, and reign as monarchs in thoſe

burning climates, where man, equally ſavage as themſelves, is unable to conquer them.

As all beings, however free, are ſubjected to phyſical laws; and, as the brute animals, as well as man, feel the influences of the heavens and the earth, it appears, that the ſame cauſes which have ſoftened and civilized the human ſpecies in our climates, have produced ſimilar effects upon every other ſpecies. The wolf, which is perhaps the moſt ferocious animal in the temperate Zone, is not nearly ſo terrible or ſo cruel as the tiger, the panther, and the lion of the Torrid Zone, or the white bear, the lynx, and the hyæna of the Frozen Zone. This difference, as if Nature, to give more harmony to her productions, had adapted the climate to the ſpecies, or the ſpecies to the climate, is not only general, but, in each particular ſpecies, the climate is formed for the manners, and the manners for the climate.

In America, where the heat, under the ſame latitudes, is leſs, and the air and earth ſofter than in Africa, the tiger, the lion, the panther, have nothing formidable in them but the name. They are no longer thoſe tyrants of the foreſt, thoſe bold and intrepid enemies of man, thoſe rapacious monſters which perpetually thirſt for blood and carnage. Theſe animals, in America, generally fly from man, and attack not other wild beaſts with open force, but lie in wait to ſurprize them: They may even be ſubdued, and almoſt tamed. Hence,

Hence, if ferocioufnefs and cruelty were natural to them, they muft have degenerated, or rather felt the influence of climate. Under a mild climate, their nature has been foftened; every excefs of temper has been moderated; and thefe changes have only rendered them more conformable to the quality of the country they inhabit.

The vegetables which cover the earth, and are more clofely connected with it than the animal that feeds upon them, participate alfo more of the nature of the climate. Every country, every degree of temperature, has its peculiar plants. At the foot of the Alps, we find the vegetables of France and Italy, and, on their fummit, thofe of the northern regions: We even meet with the fame plants on the frozen ridges of the African mountains. On the fouth fide of the mountains which divide the Mogul empire from the kingdom of Cafhmire, we fee all the Indian plants, and we are furprifed to find, on the oppofite fide, nothing but the European kinds. Intemperate climates likewife produce drugs, perfumes, poifons, and all vegetables whofe juices are highly exalted. The productions of temperate climates, on the contrary, are always mild: The fofteft and moft wholefome herbs, the fweeteft fruits, the gentleft animals, and the moft polifhed men, are peculiar to thofe happy climates. Thus the earth produces plants, the earth and plants make animals, and the earth, plants, and animals,

animals, give birth to man; for the qualities of vegetables proceed immediately from the earth and the air; the temperature and other relative qualities of herbivorous animals are derived from the plants upon which they feed; and the physical qualities of man, and other creatures which are nourished partly by flesh, and partly by plants, depend, though more remotely, on the same causes, whose influence extends even to dispositions and manners. Figure and size, which appear to be absolute and determined qualities, depend, however, like the relative qualities, upon the influence of climate, and concur in proving that every thing is moderate in temperate regions. The size of our largest quadrupeds have no proportion to that of the elephant, the rhinoceros, or hippopotamus. Our largest birds are small, when compared with the ostrich, the condor, or the cassawary; and what comparison is there between the fishes, the lizards, and the serpents of our climates, with the whale, the walrus, and manati, which people the northern seas; or the crocodiles, the large lizards, and the enormous serpents which infest the land and waters of the south? And, if we examine each species in different climates, we shall find sensible varieties both in size and figure*. These changes are produced in a slow and imperceptible manner. Time is the great workman of Nature. He moves with regular and uniform steps. He

* See the History of the Horse, vol. iii. p. 306.; Goat, vol. iii. p. 406.; Hog, vol. iii. p. 500.; and Dog, vol. iv. p. 1.

performs

performs no operation ſuddenly; but, by degrees or ſucceſſive impreſſions, nothing can reſiſt his power; and thoſe changes which, at firſt, are imperceptible, become gradually ſenſible, and at laſt are marked by reſults too conſpicuous to be miſapprehended.

Wild and free animals, without excepting man, are, of all animated beings, leaſt ſubject to changes or variations of any kind. As they are at abſolute liberty in the choice of their food and their climate, their nature is more permanent than that of domeſtic animals, which are enſlaved, tranſported, maletreated, and fed, without conſulting their inclination or taſte. Wild animals live perpetually in the ſame manner. They never wander from climate to climate. The wood where they are brought forth is a country to which they are faithfully attached, and they never depart from it, unleſs they perceive that they can no longer live there in ſafety. They fly not ſo much from their natural enemies, as from the preſence of man. Nature has furniſhed them with reſources againſt the other animals, and put them on a level; they know their ſtrength, their addreſs, their deſigns, their haunts, and, if unable to avoid them, oppoſe force to force: In a word, they are ſpecies of the ſame genus: But how can they defend themſelves againſt a being who is able to ſeize without ſeeing, and kill without approaching them?

It is man, therefore, who diſturbs and diſperſes wild animals, and renders them a thouſand times more ſavage than they would naturally be; for moſt of them require tranquillity only, and a moderate uſe of the air and earth. Nature even teaches them to live together, to unite into families, and to form ſocieties. In countries not totally engroſſed by man, ſome veſtiges of theſe ſocieties ſtill remain. We there perceive common works carried on, deſigns that, though not founded on reaſon, appear to be projected upon rational conventions, the execution of which ſuppoſes union at leaſt, and a joint co-operation of labour. It is not by force or phyſical neceſſity, like the ants, the bees, &c. that the beavers labour and build houſes; for they are neither conſtrained by ſpace, nor time, nor number, but unite from choice. Thoſe which agree dwell together; and thoſe which do not agree, remove; and ſome of them have been remarked, which, being conſtantly repulſed by others, were obliged to betake themſelves to a ſolitary life. It is only in diſtant and deſert countries, where they dread not the approach of man, that they incline to render their dwellings more fixed and commodious, by conſtructing houſes, or a kind of villages, which have no ſmall reſemblance to the feeble and primitive efforts of a naſcent republic. In countries, on the contrary ſpread over by men, they carry terror along with them. The ſociety of animals

is

is then at an end. All induftry ceafes, and every art is ftifled. They think no more of building, and neglect every conveniency. Perpetually preffed by fear and neceffity, their only defire is the bare prefervation of life, and their only occupation is flight and concealment. If the human fpecies, as is reafonable to fuppofe, fhall, in the progrefs of time, people equally the whole furface of the earth, the hiftory of the beaver, in a few ages, will be regarded as a ridiculous fable.

We may, therefore, conclude, that the talents and faculties of animals, inftead of augmenting, are perpetually diminifhing. Time fights againft them. The more the human fpecies multiplies and improves, the more will the wild animals feel the effects of a terrible and abfolute tyrant, who, hardly allowing them an individual exiftence, deprives them of liberty, of every affociating principle, and deftroys the very rudiments of their intelligence. What advances they have made, or may ftill make, convey little information of what they have been, or might acquire. If the human fpecies were annihilated, to which of the animals would the fceptre of the earth belong?

The STAG, or RED DEER*.

THE ſtag is one of thoſe innocent, gentle, and peaceable animals, which ſeem to be deſtined to embelliſh and animate the ſolitudes of the foreſt, and to occupy, at a diſtance from man, the tranquil retreats of thoſe gardens of Nature. The elegance and lightneſs of his

* The deer kind have upright, ſolid, branched horns, which annually fall off; eight cutting teeth in the lower jaw, and none in the upper. The STAG has long, upright, rounded, and much branched horns: The brow antlers are ſlender and ſharp. The colour of the ſtag is generally a reddiſh brown, with ſome black about the face, and a black liſt runs down the hind part of the neck and between the ſhoulders. It grows to a large ſize; one killed in the county of Aberdeen weighed 18 ſtone Scottiſh weight, or 314 lb. The horns of the American ſtag ſometimes weigh 30 lb. and are about four feet high. *Pennant's Synopſ. of Quad.* p. 49.

The name of the ſtag in Greek is Ελαφος, in Latin *Cervus*, in Italian *Cervo*; in Spaniſh *Ciervo*; in Portugueſe *Veado*; in German *Hirſch*; in Daniſh *Hiort*; in Swediſh *Kron-hiort*; in Dutch *Hért*; in Poliſh *Jelijenii*.

Cervus, Geſner. Icon. Animal. Quad. p. 43, 44. Aldrov. Quad. Biſulc. p. 771. 774. *Johnſt. Hiſt. Nat.* p. 58. tab. xxxv. fig. 1. Charleton de Differ. Animal. p. 8. *Ray, Synopſ. Quad.* p. 84. Plinii lib. viii.

CHARACT. GEN. Cervus, cornua ſolida, tenera, corio hirto tecta, apiceque creſcentia, denudata, annua. Dentes primorés inferiores VIII. Laniarii nulli (interdum ſolitarii ſuperius). CHAR. SPEC. Cervus, elaphus, cornibus ramoſis, teretibus, recurvatis. *Linn. Syſt. Nat.* p. 93.

Cervus nobilis, ramis teretibus, omnibus notus; *Klein. Quad. Hiſt. Nat.* p. 23.

figure,

figure, the commodiousness of his stature, the flexibility and springiness of his limbs, his grandeur, strength, and swiftness, and his head, which is rather adorned than armed with living branches, that, like the leaves of trees, are annually renewed, sufficiently distinguish him from the other inhabitants of the wood. As he is also the noblest of these animals, he ministers to the pleasure, and has occupied the leisure, of the greatest heroes. The exercise of the chase should always succeed, or rather precede, the fatigues of war. To know the management of horses and arms, are talents common to the warrior and the hunter. To be accustomed to fatigue, address, dexterity, and quickness of movement, so necessary for the support of courage, are qualities acquired in the chase, and extremely useful in battle. Hunting is a most delightful school of a necessary art. It is the only amusement which entirely divests us of care, the only recreation that is not accompanied with effeminacy, and gives vivacity and pleasure, without languor or disgust.

How can men, who, from their situation in life, are perpetually harassed with company, be better employed than in hunting? Always surrounded with a multitude, teased with the importunity of their demands, obliged to give their attention to affairs which are foreign to them, agitated by the solicitations of men of high rank, and constrained and fettered in proportion to their

their elevation, great men would feel only the weight of their own grandeur, and exiſt only for others, if they did not occaſionally abſtract themſelves from a croud of paraſites and flatterers. To preſerve ſelf-enjoyment, to recal perſonal attachments, and receive private friendſhip, ſentiments a thouſand times more precious and intereſting than all the ideas of grandeur, retirement from the tumult and buſineſs of the world is ſometimes neceſſary; and what retirement can be more various and animated than the chaſe? what exerciſe more uſeful to the body? what amuſement more agreeable to the mind?

Perpetual action, or intercourſe with man, is equally painful as perpetual thinking. Nature never intended man for the contemplation of abſtract ſubjects. To be occupied, without relaxation, in difficult ſtudies, to lead a ſedentary life, and to make the cloſet the centre of our exiſtence, is equally unnatural as to paſs our days in tumult and agitation, continually drawn along by the movements of other men, and obliged to keep a jealous and conſtrained watch over our own conduct, looks, and geſtures. Whatever ideas we may conceive of the dignity of human nature, it is apparent, that public exhibition is not exiſtence, and that we are leſs fitted for thinking than for action, for reaſoning than enjoyment. True pleaſure conſiſts in the unreſtrained uſe of ourſelves. Our beſt gifts are thoſe we receive from Nature. She preſents us

with

with the uſeful and inexhauſtible enjoyments which ariſe from the air, the earth, the fields, and the foreſts. Hence a taſte for hunting, fiſhing, gardening, and agriculture, is natural to all men: And, in ſocieties leſs complicated than ours, there are only two ranks, both of them connected with this mode of life; the Nobles, whoſe buſineſs is arms and hunting; and the vulgar, who are occupied in cultivating the earth.

In poliſhed ſocieties, where every thing is improved and brought nearer perfection, to render hunting more delightful and ſprightly, to ennoble this moſt beneficial and reſpectable of all exerciſes, it has been formed into an art. The chaſe of the ſtag requires a ſpecies of knowledge, which can only be learned by experience: It implies a royal aſſemblage of men, horſes, and dogs, all ſo trained, practiſed, and diſciplined, that their movements, their reſearches, and their ſkill, muſt concur in producing one common end. The huntſman ſhould know the age and the ſex of the animal; he ſhould be able to diſtinguiſh with preciſion, whether the ſtag he has *harboured* * with his hound be a *knobber* †, a young ſtag ‡, in his ſixth or ſeventh year, or an

* *To harbour* a ſtag, is to go round the place in which he has taken refuge, and to learn whether he has not eſcaped.

† *Knobber* is a ſtag after he paſſes his firſt year till he arrives at the third.

‡ In the third, fourth, or fifth year of his age.

an old ſtag *. The chief marks which convey this intelligence is derived from the *foot* †, and the excrement. The *foot* of the ſtag is better formed than that of the hind, or female. Her *leg* ‡ is more groſs and nearer the heel. The impreſſions of his feet are rounder, and farther removed from each other. He moves more regularly, and brings the hind foot into the impreſſion made by the fore foot. But the diſtance between the ſteps of the hind are ſhorter, and her hind feet ſtrike not ſo regularly the track of the fore feet. As ſoon as the ſtag acquires his fourth horns, he is eaſily diſtinguiſhed; but, to know the *foot* of a young ſtag from that of a hind, requires repeated experience. Stags of ſix, ſeven, &c. years, are ſtill more eaſily known; for their fore foot is much larger than the hind foot; the older they are, the ſides of their feet are the more worn §; the diſtance of their ſteps are more regular, than thoſe of young ſtags; they always place their hind foot exactly in the track of the fore foot, except, when they ſhed their horns, the old

* A ſtag is ſaid to be *old* from eight years and upwards.

† *Foot* is uſed for the impreſſion made on the ground by the foot.

‡ In the language of hunters, *leg* means the two bones behind the foot, which make an impreſſion on the ground along with the foot.

§ This mark is equivocal; for the wearing of the hoof depends much on the plainneſs or roughneſs of the country which the animals frequent.

ſtags

ſtags *miſplace* *, at this ſeaſon, nearly as often as the young ones; but in this they are more regular than the hind or young ſtag, placing the hind foot always at the ſide of the fore foot, and never beyond or within it.

When the huntſman, from the dryneſs of the ſeaſon, or other circumſtances, cannot judge by the foot, he is obliged to trace the animal backwards, and endeavour to find his dung. This mark requires, perhaps, greater experience than the knowledge of the foot; but, without it, the huntſman would be unable to give a proper report to the company. After the report of the huntſman, and the dogs are led to the refuge of ſtag, he ought to encourage his hound, and make him reſt upon the track of the ſtag till the animal be unharboured. Inſtantly the alarm is given to uncouple the dogs, which ought to be enlivened by the voice and the horn of the huntſman. He ſhould alſo diligently obſerve the foot of the ſtag, in order to diſcover whether the animal has ſtarted and ſubſtituted another in his place. But it is then the buſineſs of the hunters to ſeparate alſo, and to recall the dogs which have gone aſtray after falſe game. The huntſman ſhould always accompany his dogs, and encourage, without preſſing them too hard. He ſhould aſſiſt them in detecting all the arts of eſcape uſed by the ſtag; for this animal has remarkable

* *To miſplace*, is to put the hind foot out of the track of the fore foot.

addreſs

addrefs in deceiving the dogs. With this view, he often returns twice or thrice upon his former fteps; he endeavours to raife hinds or younger ftags to accompany him, and draw off the dogs from the object of their purfuit: He then flies with redoubled fpeed, or fprings off at a fide, lies down on his belly, and conceals himfelf. In this cafe when the dogs have loft his foot, the huntfmen, by going backwards and forwards, affift them in recovering it. But, if they cannot find it, they fuppofe that he is refting within the circuit they have made, and go in queft of him. But, if they are ftill unable to difcover him, there is no other method left, but, from viewing the country, to conjecture where he may have taken refuge, and repair to the place. As foon as they have recovered his foot, and put the dogs upon the track, they purfue with more advantage, becaufe they perceive that the ftag is fatigued. Their ardour augments in proportion to his feeblenefs; and their fcent becomes more diftinct as the animal grows warm. Hence they redouble their cries and their fpeed; and, though the ftag practifes ftill more arts of efcape than formerly, as his fwiftnefs is diminifhed, his arts and doublings become gradually lefs effectual. He has now no other refource but to fly from the earth which he treads, and get into the waters, in order to cut off the fcent from the dogs. The huntfmen go round thefe waters, and again put the dogs on the track of his foot. The ftag, af-

ter taking to the water, it is incapable of running far, and is ſoon *at bay**. But he ſtill attempts to defend his life, and often wounds the dogs, and even the huntſmen when too forward, by blows with his horns, till one of them cuts his hams to make him fall, and then puts an end to his life by a blow of a hanger. They now celebrate the death of the ſtag by a flouriſh of their horns; the dogs are allowed to trample upon him, and at laſt partake richly of the victory by devouring his fleſh.

Every ſeaſon is not equally proper for hunting the ſtag with hounds. In ſpring, when the leaves begin to unfold and to adorn the foreſts, when the earth is covered with freſh herbage and flowers, their perfumes diminiſh the ſenſation of the dogs; and, as the ſtag is then in his greateſt vigour, it is extremely difficult for them to come up with him. It is likewiſe a ſettled point among hunters, that, when the hinds are about to bring forth, the chaſe is moſt difficult, and that, at this period, the dogs often quit a fatigued ſtag, and purſue any hind which bounds before them. In the ſame manner, in the beginning of autumn, when the rutting ſeaſon commences, the hounds hunt without ardour: The ſtrong odour of love renders, perhaps, the ſcent more uninteresting; and, perhaps, at this ſeaſon, the odour of all ſtags is nearly the ſame. During the winter

* When a ſtag is worn out with fatigue, he turns upon the hounds, and is then ſaid to be at bay.

 ſnows,

ſnows, it is alſo improper to hunt the ſtag; becauſe the hounds have no acuteneſs of ſcent, and ſeem to purſue the foot rather by the eye than the noſe. As, in this ſeaſon, the ſtags find not ſufficient nouriſhment in their retreats, they iſſue forth into the more open parts of the country, and even into the ſown fields. They aſſemble in flocks in the month of December, and, when the froſts are ſevere, they ſeek ſhelter on the ſea-coaſts, or in covered places, where they lock themſelves faſt together, and acquire warmth by mutual reſpiration. When the rigours of winter decline, they frequent the borders of the foreſt, and make depredations on the riſing wheat. In ſpring they ſhed their horns, which fall off ſpontaneouſly, or by rubbing them gently againſt the branches of trees. It is ſeldom that both horns fall off at the ſame time, the one generally preceding the other a day or two. The old ſtags caſt their horns firſt, which happens about the end of February or beginning of March. An aged ſtag, or one in his ſeventh year or upwards, does not caſt his horns before the middle of March; a ſtag of ſix years ſheds his horns in April; young ſtags, or thoſe from three to five years old, ſhed their horns in the beginning, and thoſe which are in their ſecond year, not till the middle or end of May. But, in all this there is much variety; for old ſtags ſometimes caſt their horns ſooner than thoſe which are younger. Beſides, the ſhedding of the horns is ad-

vanced by a mild, and retarded by a ſevere and long winter.

As ſoon as the ſtags caſt their horns, they ſeparate from each other, the young ones only keeping together. They no longer haunt the deepeſt receſſes of the foreſt, but advance into the cultivated country, and remain among bruſhwood during the ſummer, till their horns are renewed. In this ſeaſon, they walk with their heads low to prevent their horns from rubbing againſt the branches; for they continue to have ſenſibility till they acquire their full growth. The horns of the oldeſt ſtags are not half completed in the middle of May, and acquire their full length and hardneſs before the end of July. Thoſe of the younger ſtags are proportionally later both in ſhedding and being renewed. But, as ſoon as they have acquired their full dimenſions and ſolidity, the ſtags rub them againſt the trees, in order to clear them of a ſkin with which they are covered: And, as they continue this friction for ſeveral days ſucceſſively, it is ſaid *, that the horns retain the colour peculiar to the juices of the trees againſt which they have been rubbed; that they become red when rubbed againſt beeches and birches, brown againſt oaks, and black againſt elms and trembling poplars. It is likewiſe ſaid, that the horns of young ſtags, which are ſmoother, take not ſo deep a tincture from the trees as thoſe of

* Le Nouveau Traité de la Venerie, p. 27.

old ſtags, which are rougher, and cloſer covered with little prominences; becauſe it is theſe prominences which retain the coloured juices of the trees. But I cannot believe that this is the true cauſe; for I have kept tamed ſtags in an incloſure where there was not a ſingle tree, and yet their horns were coloured in the ſame manner as in thoſe which inhabit the foreſts.

Soon after the ſtags have poliſhed their horns, they begin to feel the impreſſions of love. Towards the end of Auguſt or beginning of September, they leave the coppice, return to the foreſts, and ſearch for the hinds. They cry with a loud voice; their neck and throat ſwell, they become perfectly reſtleſs, and traverſe, in open day, the fields and the fallow grounds; they ſtrike their horns againſt trees and hedges; in a word, they ſeem to be tranſported with fury, and run from country to country till they find the hinds or females, whom they purſue and compel into compliance; for the female at firſt avoids and flies from the male, and never ſubmits to his embraces till ſhe be fatigued with the purſuit. The old hinds likewiſe come in ſeaſon before the younger ones. When two ſtags approach the ſame hind, they muſt fight before they enjoy. If nearly equal in ſtrength, they threaten, paw the ground, ſet up terrible cries, and attack each other with ſuch fury, that they often inflict mortal wounds with the ſtrokes of their horns. The combat never terminates but in the defeat or

flight

flight of one of the rivals. The conqueror loses not a moment in enjoying his victory, unless another rival approaches, whom he is again obliged to attack and repel. The oldest stags are always masters of the field; because they are stronger and more furious than the young ones, who must wait patiently till their superiors tire, and quit their mistresses. Sometimes, however, the young stags accomplish their purposes when the old ones are fighting, and, after a hasty gratification, fly off. The hinds prefer the old stags, not because they are most courageous, but because they are much more ardent. They are likewise more inconstant, having often several females at a time; and, when a stag has but one hind, his attachment to her does not continue above a few days: He then leaves her, goes in quest of another, with whom he remains a still shorter time; and, in this manner, passes from one to another, till he is perfectly exhausted.

This ardour of love lasts only three weeks, during which the stags take very little food, and neither sleep nor rest. Night and day, they are either walking, running, fighting, or enjoying the hinds. Hence, at the end of the rutting season, they are so meagre and exhausted, that they recover not their strength for a considerable time. They generally retire to the borders of the forests, feed upon the cultivated fields, where they find plenty of nourishment, and remain there till their strength is re-established. The rutting

rutting ſeaſon of old ſtags commences about the beginning, and ends about the 20th day of September. In thoſe of ſix or ſeven years old, it begins about the tenth of September, and concludes in the beginning of October. In young ſtags, or thoſe in their third, fourth, or fifth year, it begins about the 20th of September, and terminates about the 15th of October; and, at the end of October, the rutting is all over, except among the *prickets*, or thoſe which have entered into their ſecond year; becauſe they, like the young hinds, are lateſt of coming into ſeaſon. Hence, at the beginning of November, the ſeaſon of love is entirely finiſhed; and the ſtags, during this period of weakneſs and laſſitude, are eaſily hunted down. In ſeaſons when acorns and other nuts are plentiful, the ſtags ſoon recover their ſtrength, and a ſecond rutting frequently happens at the end of October; but it is of much ſhorter duration than the firſt.

In climates warmer than that of France, the rutting time, like the ſeaſons, is more forward. Ariſtotle informs us *, that in Greece, it commences in the beginning of Auguſt, and terminates about the end of September. The hinds go with young eight months and ſome days, and ſeldom produce more than one fawn. They bring forth in May or the beginning of June, and ſo anxiouſly conceal their fawns, that they often expoſe themſelves to be chaſed; with a

* Ariſtot. Hiſt. Animal. lib. vi. c. 29.

view to draw off the dogs, and afterwards return to take care of their young. All hinds are not fertile; for ſome of them never conceive. Theſe barren hinds are groſſer and fatter than thoſe which are prolific, and alſo come ſooneſt in ſeaſon. Some hinds are ſaid to have horns like the ſtag, which is not altogether improbable. The young are not called *fawns* or *calves* after the ſixth month; the knobs of their horns then begin to appear, and they take the name of *knobbers* till their horns lengthen into *ſpears*, and then they are called *brocks* or *ſtaggards*. During the firſt ſeaſon, they never leave their mothers. In winter, the ſtags and hinds, of all ages, keep together in flocks, which are always more numerous in proportion to the rigour of the ſeaſon. They ſeparate in ſpring: The hinds retire to bring forth; and, during this period, the flocks conſiſt only of knobbers and young ſtags. In general, the ſtags are inclined to aſſociate, and nothing but fear or neceſſity obliges them to diſperſe. The ſtag is capable of generating at the age of eighteen months: Thoſe brought forth during the ſpring of the preceding year, cover the hinds in autumn; and it is preſumeable that theſe embraces are prolific. The following circumſtances, however, may render this opinion doubtful: The ſtags have not then acquired above a half or two thirds of their growth, which is not completed till the eighth year of their age; and their horns continue to increaſe during

during the ſame period. But it ought to be remarked, that the fawn ſoon gathers ſtrength; that, during the firſt, and even the ſecond year, his growth is very quick; and that he has already a redundance of nouriſhment, becauſe his horns are conſiderably long, which is the moſt certain mark of ability to impregnate. It is allowed that animals, in general, are not capable of procreating till they have nearly acquired their full growth. But thoſe which have fixed ſeaſons for rutting or ſpawning, ſeem not to obſerve this law. Fiſhes ſpawn and are prolific before they have attained a fourth, or even an eighth part of their growth; and, among quadrupeds, thoſe which, like the deer-kind, have determined ſeaſons for rutting, procreate earlier than other animals.

There are ſo many relations between the nutrition, the production of the horns, the rutting, and the generation of theſe animals, that, to have a clear conception of the particular effects which reſult from them, it is neceſſary to give a general recapitulation of what I formerly advanced on the ſubject of reproduction *. Generation depends ſolely on a redundance of nouriſhment. During the growth of an animal, which is always moſt rapid in infancy, the nouriſhment is entirely exhauſted in the extenſion and developement of the body. Hence there is no redundance, conſequently no production or ſecre-

* See above, vol. ii. chap. ii. iii. iv.

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tion of ſeminal fluid, and, of courſe, young animals are incapable of procreation. But, when they have obtained the greateſt part of their growth, the redundance of nouriſhment begins to manifeſt itſelf by new productions. In man, the beard, the hair, the prominency of the breaſts, and the expanſion of the organs of generation, appear at the age of puberty. In the brute creation, and particularly in the ſtag, this redundance produces effects ſtill more remarkable, as the growth of the horns, the ſwelling of the teſticles, the turgidity of the neck and throat, the fat, the rutting, &c. And, as the growth of the ſtag is at firſt very rapid, a year only paſſes before the redundance of nouriſhment begins to ſhow itſelf by the production of horns: If brought forth in May, the rudiments of the horns appear in the ſame month of the following year; and they continue to lengthen and acquire ſolidity, in proportion to the quantity of nouriſhment taken by the animal. About the end of Auguſt, they are fully grown, and ſo denſe and inſenſible, that the animal rubs them againſt the trees, in order to deprive them of the ſkin or ſcurf with which they are covered. At the ſame time, the fat, which is likewiſe produced by the redundance of nouriſhment, ceaſes to accumulate, and begins to be determined towards the organs of generation, and to excite in the ſtag that ardour of deſire which renders him perfectly furious. That the production of horns, and the ſecretion of ſemen, depend on the ſame cauſe, is evident from

from this fact, that, when the organs necessary for the secretion of semen are destroyed by castration, the production of the horns is likewise prevented; for, if this operation is performed after the horns are shed, they are never renewed; and if, on the contrary, it is done when the horns are perfect, they never fall off. In a word, after castration, the animal remains during life in the same condition it was before that operation. As it feels no longer the ardour of rutting, the concomitant symptoms likewise disappear. There is no longer any accumulation of fat or suet, no more turgidity of the neck and throat, and the disposition of the creature becomes more gentle and tranquil. The parts cut off, therefore, were necessary, not only for collecting the redundant nourishment, but likewise for pushing it to the surface of the body in the form of fat, and particularly to the top of the head, where it gives rise to the horns, and for giving vigour and spirit to the animal. Castrated stags, it is true, become fat; but they produce no horns; their neck and throat never swell; and their fat is never so highly exalted as that of entire stags, which, in the rutting season, have an odour so strong as to be perceived at a great distance; and their flesh is so infected with it, that it is uneatable, offensive to the smell, and putrifies in a very short time; while that of the castrated stag may be preserved fresh, and eat at all seasons. The difference between the horns of stags of the

ſame age, of which ſome are thick, and others thin and ſlender, which is ſolely owing to a defect of food, is another proof that the horns are produced by redundant nouriſhment: For a ſtag which inhabits a rich country, where he is not diſturbed by dogs or men, but is allowed to feed and ruminate in peace, will always have the higheſt, wideſt, largeſt, and moſt branchy horns. But thoſe which live in ſituations where they can neither find repoſe nor a ſufficient quantity of food, will have horns with few branches, ſlender ſtems and brow-antlers. Thus it is eaſy to judge, by the horns of the ſtag, whether he has lived in a rich and peaceable country, or the oppoſite. Thoſe which are in a bad condition, have been wounded, or much diſturbed by hunting, are ſeldom fat, or have fine horns; their rutting time is alſo later; and their horns are neither ſo ſoon ſhed nor renewed. Hence every circumſtance concurs in demonſtrating that the horns, like the ſeminal fluid, are nothing but the redundant and ſuperfluous organic nouriſhment, which could not be exhauſted in expanding and ſupporting the animal body.

It is, therefore, apparent, that penury of food both retards the growth and diminiſhes the ſize of the horns; and, perhaps, it is not impoſſible, by retrenching the quantity of food, to ſuppreſs entirely this production, without having recourſe to caſtration. It is, however, certain, that caſtrated ſtags eat leſs food than thoſe which are unmutilated; and the females of this ſpecies, as well

well as thoſe of the fallow-deer, the roe, and the elk, have no horns, becauſe they eat leſs than the males; and becauſe, at the very time that a redundance of nouriſhment would naturally happen, they are with young, and, inſtead of ſhowing itſelf externally, it is firſt exhauſted in nouriſhing the fœtus, and afterwards in nouriſhing the fawn. The objection, that the female rein-deer, which has horns like the male, rather ſupports than weakens this argument; for, of all horned animals, the rein-deer, in proportion to his ſize, has the largeſt and moſt voluminous horns, often extending, before and behind, the whole length of the body. He likewiſe abounds moſt in fat *; and, beſides, the horns of the female are much ſmaller than thoſe of the male. This example, therefore, proves no more than that, when the redundance is ſo great as not to be exhauſted by geſtation and the growth of the fœtus, it breaks through the body, and forms a new production, as in the male, only ſmaller in ſize, becauſe the quantity of redundant matter is leſs.

What I have remarked concerning nouriſhment ought not to be extended to the maſs or volume of the aliments, but only to the quantity of organic particles, that living, active, and prolific matter which unfolds and ſupports all animated beings. The reſt is nothing but dregs, which may be more or leſs in quantity, without inducing any change upon the body: And, as the

* La Venerie de du Fouilloux, p. 97.

lichen

lichen rangiferinus, or rein-deer liverwort, is the ordinary food of the rein-deer, and is more ſubſtantial than the leaves, the bark, or the buds of trees, it is not ſurpriſing, that this animal ſhould have a greater redundance of organic particles, and, conſequently, larger horns, and more fat, than the common ſtag. It muſt be acknowledged, however, that the organic matter which produces the horns, is not perfectly diſengaged from uſeleſs particles, and that it preſerves, after paſſing the body of the animal, marks of its former vegetable ſtate. The horns of the ſtag ſhoot, grow, and are diſpoſed like the branches of a tree. Its ſubſtance is, perhaps, leſs oſſeous than lignous. To uſe the expreſſion, it is a vegetable grafted upon an animal, participating of the nature of both, and forming one of thoſe ſhades by which Nature always bounds the extremities of her productions, and which ſhe employs to connect ſubſtances that are greatly removed from each other.

In the animal, as formerly remarked*, both extremities of the bones grow at a time. The fulcrum upon which the extending power is exerted, is in the middle of the bone, which part is always firſt oſſified, and from which the two extremes progreſſively recede, and continue ſoft till the bone acquires its full length. In the vegetable, on the contrary, only one extremity of the wood grows. The bud, which unfolds to form a

* See above, vol. ii. art. *Of Old Age and Death.*

branch,

branch, is attached to the old wood by its inferior extremity, and upon this fulcrum the power of longitudinal extenſion acts. This remarkable difference between the vegetation of bones and the ſolid parts of plants, does not take place in the horns of ſtags. On the contrary, nothing can be more ſimilar to the growth of a tree. The horns extend at one extremity only, the other ſerving for a fulcrum. They are at firſt tender as an herb, and then harden like wood. The ſkin which covers and grows along with them is their bark, and it is rubbed off after they attain their full ſize. As long as they continue to grow, their extremities are ſoft; and they likewiſe divide into ſeveral branches. In a word, every circumſtance is ſimilar, and correſponds in the developement of both. Hence the organic particles, which conſtitute the living ſubſtance of the ſtag, ſtill retain the impreſſion of the vegetable; becauſe they arrange themſelves in the ſame order as the parts of plants. Here it is apparent, that matter has an influence upon form. The ſtag which inhabits the foreſt, and feeds on the ſprigs of trees only, takes ſo ſtrong an impreſſion from the wood, that he produces a ſpecies of tree, which preſerves indelible and evident marks of its origin. This effect, though ſingular, is not ſolitary, and depends on a general cauſe, which I have already pointed out.

Both in animals and vegetables, the character, or mould, of each ſpecies, is the moſt conſtant

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and unalterable thing in Nature: What is moſt variable and deſultory, is the matter of which they are compoſed. Matter, in general, ſeems to be indifferent to all forms, and capable of receiving every poſſible impreſſion. The organic or living particles of this matter paſs from vegetables to animals, without deſtruction or alteration, and form equally the living ſubſtance of the herb, of the wood, of the fleſh, and of the bones. According to this view, it appears that matter can never have any influence on form, and that no kind of food, provided the animal can extract the organic particles, and aſſimilate them by nutrition, could induce any change upon the form, or have any other effect than to ſupport and expand the body, by modelling itſelf upon all the particles of the interior mould, and intimately penetrating them. What proves this point is, that animals which live upon herbage, a ſubſtance very different from that of their own bodies, extract from it materials ſufficient for the production of fleſh and blood, and that they are nouriſhed and grow as well as animals who feed upon fleſh alone. However, by examining Nature more minutely, we ſhall find, that the organic particles ſometimes do not perfectly aſſimilate themſelves to the internal mould, and that matter has often a ſenſible influence upon form. Size, for example, which is one of the attributes of form, varies in every ſpecies, according to the difference of climate. The quality and quantity

of fleſh, two other attributes of form, change according to the difference of food. This organic matter, therefore, which the animal aſſimilates to its own body by nutrition, is not abſolutely indifferent to the reception of every form, nor deprived of the original figure which it poſſeſſed. It retains ſome characters of its primitive ſtate. It acts, therefore, by its proper form upon that of the organized body to which it affords nouriſhment; and, though this action is almoſt imperceptible, and infinitely inferior to the power which obliges the organic particles to aſſimilate themſelves to the internal mould that receives them, yet, in the progreſs of time, ſenſible effects muſt reſult from it. The ſtag, who inhabits the foreſts, and lives ſolely upon wood, produces and carries about with him a ſpecies of trees, which is nothing but the redundant part of his nouriſhment. The beaver, who lives in the waters, and feeds upon fiſhes, has a tail covered with ſcales. The fleſh of the otter, and of moſt water fowls, is a Lent diet, a kind of fiſhy fleſh. We may, therefore, preſume, that animals perpetually nouriſhed by the ſame food, however ſtrong the original impreſſion of Nature, would, in proceſs of time, acquire a tincture from the qualities of this food, and undergo a kind of transformation, by an aſſimilation contrary to the firſt. The nouriſhment would no longer aſſimilate itſelf entirely to the form of the animal, but the animal would partly aſſimilate itſelf to

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the form of nouriſhment, as we perceive in the horns of the ſtag and the tail of the beaver.

In the ſtag, the horns are an acceſſory, a part foreign to the animal, and regarded as belonging to him only becauſe it proceeds from his body. But it is really a vegetable production, ſince it retains the characters of that vegetable from which it derives its origin, and reſembles the wood of trees, in the manner of its growth, ramification, ſolidity, drying, and ſeparation; for, after acquiring its greateſt denſity, it ceaſes to extract nouriſhment, it falls ſpontaneouſly, like a ripe fruit from the branch. The very name given to this production in our language is an indication that it has been regarded as wood*, and not as a horn, a bone, a tuſk, &c. And, though this theory ſeems to be ſufficiently eſtabliſhed by the preceding reaſoning, yet I ought not to paſs over a fact recorded by the ancients. Ariſtotle†, Theophraſtus‡, and Pliny‖, tell us, that ivy has been ſeen growing round the young horns of ſtags. If this fact be true,

* The French call the horns of a ſtag his *wood*.

† Captus jam cervus eſt, hederam ſuis enatam cornibus gerens viridem, quæ cornu adhuc tenello forte inſerta, quaſi ligno viridi coaluerit. *Ariſt. Hiſt. Animal.* l. ix. c. 5.

‡ Hedera in multis creatur, et quod mirabilius, viſa eſt in cornibus cervi etiam aliquando. Commovit (inquit Jul. Scaliger apud Theophraſtum) virum accuratum cervi cornibus hærens hedera; quid enim eo ſeminium detulit, &c. *Lib.* II. *de Cauſ. Plant.* cap. 23.

‖ In mollioribus cervorum cornibus hedera coaleſcit, dum ex arborum atritu illa experiuntur. *Plin. de Admirand. Auditionibus.*

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and it may eaſily be determined by experiment, an analogy ſtill more intimate will be eſtabliſhed between the *wood* of the ſtag and that of trees.

The horns and tuſks of other animals are not only different from the *wood* of the ſtag, but, in their growth, texture, and form, both external and internal, there is nothing analogous to wood. The nails, the claws, the hairs, the feathers, the ſcales of animals, grow, it is admitted, by a ſpecies of vegetation; but this vegetation differs widely from that of wood. The horns of oxen, goats, antelopes, &c. are hollow within; but the wood of the ſtag is equally ſolid through its whole extent. The ſubſtance of theſe horns is the ſame with that of the nails, claws, and ſcales: But the horns of the ſtag reſemble wood more than any other ſubſtance. The inſide of all hollow horns is covered with a kind of *perioſteum*, and they contain in their cavity a bone, or core, which ſupports them; they never ſhed, but grow during the life of the animal; and its age may be learned by their rings or annual circles. Inſtead of growing by their ſuperior extremity, like the *wood* of the ſtag, they grow like nails, feathers, and hairs, by their inferior extremity. In the ſame manner, the tuſks of the elephant, walrus, and wild boar, and all other animals, are hollow within, and grow only by their inferior extremity. Thus horns and

tuſks have no more analogy to the *wood* of the ſtag than nails, hairs, or feathers.

Vegetation may, therefore, be reduced to three kinds. The firſt, in which the growth proceeds from the ſuperior extremity, as in plants, trees, and the *wood* of the ſtag; the ſecond, where the growth advances from the inferior extremity, as in horns, nails, claws, hairs, feathers, ſcales, tuſks, teeth, and other external parts of animal bodies; the third, in which the growth proceeds from both extremities at the ſame time, as in bones, cartilages, muſcles, tendons, and other internal parts of animals. The material cauſe of all theſe three ſpecies, is the redundance of organic nouriſhment; and the aſſimilation of this nouriſhment by the internal mould, which receives it, is the effect. Thus the growth of an animal is always more or leſs rapid, in proportion to the quantity of this redundant nouriſhment; and, after the greateſt part of growth is acquired, it is determined to the ſeminal reſervoirs, endeavours to eſcape from the body, and to produce, by means of copulation, new organized beings. The difference between animals, which, like the ſtag, have fixed ſeaſons, and other animals which can engender at all times, proceeds entirely from their manner of feeding. Man, and domeſtic animals, who have daily an equal quantity of food, and often too much, are perpetually in a capacity for procreation. The ſtag, on the contrary, and moſt wild animals, who ſuffer greatly

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in the winter for want of food, have then nothing redundant, and are incapable of generating till they recruit during the ſummer. It is immediately after this ſeaſon that the ſtag begins to rut; and, by the great waſte he ſuffers at this period, he continues during winter in a ſtate of languor and debility. His fleſh is then ſo meagre, and his blood ſo impoveriſhed, that worms breed under his ſkin, which ſtill augment his miſery, and he does not get quit of them till the ſpring, when he acquires new life and vigour by the active nouriſhment furniſhed to him by the freſh productions of the earth.

Thus the life of the ſtag is ſpent in alternate plenty and want, vigour and debility, health and ſickneſs, without having any change introduced into his conſtitution by theſe oppoſite extremes. He lives as long as other animals which are not ſubject to ſuch viciſſitudes. As he grows five or ſix years, he lives ſeven times that number, or from 35 to 40 years*. What has been reported concerning the longevity of the ſtag merits no credit. It is only a popular prejudice which prevailed in the days of Ariſtotle, and which that philoſopher conſidered as improbable, becauſe neither the time of geſtation, nor of the growth of the young ſtag, indicated long life†.

* Noveau Traité de la Venerie, p. 141.

† Vita eſſe perquam longa hoc animal fertur; ſed nihil certi ex iis quæ narrantur videmus; nec geſtatio aut incrementum hinnulli ita evenit quaſi vita eſſet prælonga. *Ariſt. Hiſt. Animal.* lib. vi. c. 29.

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This authority ought to have aboliſhed the prejudice: But it has been renewed, in the ages of ignorance, by a fabulous account of a ſtag taken by Charles VI. in the foreſt of Senlis, with a collar upon which was written this inſcription, *Cæſar hoc me donavit.* The love of the marvellous inclined men to believe that this animal had lived a thouſand years, and had his collar from a Roman emperor, rather than to ſuppoſe that he came from Germany, where all the emperors take the name of *Cæſar.*

The horns of the ſtag augment annually both in height and thickneſs, from the ſecond to the eighth year, and continue nearly in equal beauty during all the vigour of life. But, when he grows old, his horns decline. Our ſtags have ſeldom more than twenty or twenty-two antlers or palms; and this number, even when at the higheſt pitch of vigour and perfection, is by no means conſtant; for it varies every year, according to the quantity of nouriſhment and repoſe the animal has enjoyed: The largeneſs of the horns depends on the ſame cauſe; and their quality is alſo determined by the kind of nouriſhment they receive. Like the wood of the foreſt, the *wood* of the ſtag is large, tender, and light, in moiſt and fertile countries, and ſhort, hard, and heavy, in dry and barren regions.

The ſize and ſtature of the animals themſelves likewiſe differ according to the places they inhabit. The ſtags which frequent the

valleys, or hills abounding in grain, are larger and taller than thofe which feed upon dry and rocky mountains. The latter are low, thick, and fhort. Neither are they equally fwift; but they run longer than the former: They are alfo more vicious, and have longer hair on their heads. Their horns are commonly fhort and black, like a ftunted tree, the bark of which is always of a darker colour. But the horns of the ftags which feed in the plains are high, and of a clear reddifh colour, like the wood and bark of trees which grow in a good foil. Thefe little fquat ftags never frequent the lofty woods, but keep always among the coppices, where they can more eafily elude the purfuit of the dogs. The Corfican appears to be the fmalleft of thefe mountain-ftags. He exceeds not the half of the height of the ordinary kind, and may be regarded as a terrier among ftags. His colour is brown, his body is fquat, and his legs are fhort. And what convinces me, that the fize and ftature of ftags in general depend on the quantity and quality of their food, is, that, having reared one at my houfe, and fed him very plentifully for four years, he was much taller, thicker, and plumper, at that age, than the oldeft ftags in my woods, which are, however, of a very good fize.

Yellow is the moft common colour of the ftag. But many of them are brown, and others

red. White ſtags are more rare, and ſeem to be a race that has become domeſtic, but very anciently; for both Ariſtotle and Pliny mention white ſtags; and they appear then to have been equally uncommon as at preſent. The colour of the horns, like that of the hair, depends on the age and nature of the animal, and the impreſſion of the air. The horns of young ſtags are whitiſh, and leſs deeply coloured than thoſe of the old. Stags, whoſe colour is a clear diluted yellow, have often pale ill-coloured horns. Thoſe which are of a lively yellow have generally red horns; and brown ſtags, eſpecially thoſe which have black hair on the neck, have likewiſe black horns. The internal ſubſtance of the horns, it is true, is almoſt equally white in all ſtags; but they differ greatly in ſolidity and texture. Some of them are very ſpongy, and even contain pretty large cavities. This difference in texture is ſufficient to account for their aſſuming different colours; and it is unneceſſary to have recourſe to the juices of trees, ſince we daily ſee the whiteſt ivory turn yellow or brown after being expoſed to the air, though its texture be much more compact than that of the ſtag's horns.

The ſtag appears to have a fine eye, an acute ſmell, and an excellent ear. When liſtening, he raiſes his head, erects his ears, and hears from a great diſtance. When he is going into a coppice, or other half covered place, he ſtops to look round him on all ſides, and ſcents the wind,

to diſcover if any object is near that might diſturb him. He is a ſimple, and yet a curious and crafty animal. When hiſſed or called to from a diſtance, he ſtops ſhort, and looks ſtedfaſtly, and with a kind of admiration, at carriages, cattle, or men; and, if they have neither arms nor dogs, he moves on unconcernedly, and without flying. He appears to liſten, with great tranquillity and delight, to the ſhepherd's pipe; and the hunters ſometimes employ this artifice to encourage and deceive him. In general, he is leſs afraid of men than of dogs, and is never ſuſpicious, or uſes any arts of concealment, but in proportion to the diſturbances he has received. He eats ſlow, and has a choice in his aliment; and, after his ſtomach is full, he lies down, and ruminates at leiſure. He ſeems to ruminate with leſs facility than the ox. It is only by violent ſhakes that the ſtag can make the food riſe from his firſt ſtomach. This difficulty proceeds from the length and direction of the paſſage through which the aliment has to go. The neck of the ox is ſhort and ſtraight; but that of the ſtag is long and arched; and, therefore, greater efforts are neceſſary to raiſe the food. Theſe efforts are made by a kind of hiccup, the movement of which is apparent, and continues during the time of rumination. His voice is ſtronger, and more quivering, in proportion as he advances in years. The voice of the hind is ſhorter and more feeble. She never

bellows from love, but from fear. The ſtag, during the rutting ſeaſon, bellows in a frightful manner: He is then ſo tranſported, that nothing diſturbs or terrifies him. He is, therefore, eaſily ſurpriſed; as he is loaded with fat, he cannot keep long before the dogs. But he is dangerous when at bay, and attacks the dogs with a ſpecies of fury. He drinks none in winter, nor in ſpring, the dews and tender herbage being then ſufficient to extinguiſh his thirſt. But, during the parching heats of ſummer, to obtain drink, he frequents the brooks, the marſhes, and the fountains; and, in the ſeaſon of love, he is ſo over-heated, that he ſearches every where for water, not only to ſatiſfy his immoderate thirſt, but to bathe and refreſh his body. He then ſwims more eaſily than at any other time, on account of his fatneſs. He has been obſerved croſſing very large rivers. It has even been alledged, that, attracted by the odour of the hinds, the ſtags, in the rutting ſeaſon, throw themſelves into the ſea, and paſs from one iſland to another at the diſtance of ſeveral leagues. They leap ſtill more nimbly than they ſwim; for, when purſued, they eaſily clear a hedge or a pale fence of ſix feet high. Their food varies in different ſeaſons. In autumn, after rutting, they ſearch for the buds of green ſhrubs, the flowers of broom or heath, the leaves of brambles, &c. During the ſnows of winter, they feed upon the bark, moſs, &c. of trees; and, in mild weather, they

they browſe in the wheat-fields. In the beginning of ſpring, they go in queſt of the catkins of the trembling poplar, willow, and hazel trees, the flowers and buds of the cornel-tree, &c. In ſummer, when they have great choice, they prefer rye to all other grain, and the black berry-bearing alder * to all other wood. The fleſh of the fawn is very good; that of the hind and knobber not abſolutely bad; but that of the ſtag has always a ſtrong and diſagreeable taſte. The ſkin and the horns are the moſt uſeful parts of this animal. The ſkin makes a pliable and very durable leather. The horns are uſed by cutlers, ſword-ſlippers, &c. and a volatile ſpirit, much employed in medicine, is extracted from them by the chymiſts.

SUPPLEMENT.

IT is well known, that, in many animals, as cats, owls, &c. the pupil of the eye contracts prodigiouſly in the light, and dilates in the dark. But this great contraction and dilatation had never been obſerved in the eyes of the ſtag. I received from M. Beccaria, a learned phyſician and celebrated profeſſor at Piſa, the following letter, dated at Turin, October 28, 1767.

‘ I preſented a piece of bread,’ ſays M. Beccaria, ‘ to a ſtag that was confined in an obſcure

* Rhamnus frangula Linn.

‘ apartment,

'apartment, to allure him to a window, that I 'might admire at leiſure the rectangular and 'tranſverſe form of his pupils, which, in a 'ſtrong light, exceed not half a line in width, 'by about five lines in length. In a fainter 'light, their breadth enlarges to more than a 'line and a half; but ſtill preſerve their rectan-'gular figure: And, in paſſing from light to 'darkneſs, they dilate about four lines, but al-'ways tranſverſely, that is, horizontally, and 'preſerve their rectangular form. Theſe facts 'may be eaſily aſcertained, by laying the hand 'upon the eye of a ſtag; for, whenever the eye 'is uncovered, the pupil will be ſeen dilated 'above four lines.'

From this fact M. Beccaria concludes with probability, that the other ſpecies of deer enjoy the ſame power of contracting and dilating their pupils. But, what is moſt remarkable, the pupils of cats, owls, and ſeveral other animals, contract and dilate vertically, while that of the ſtag contracts and dilates horizontally.

To the hiſtory of the ſtag, I muſt add a fact communicated to me by M. le Marquis d'Amezaga, who, to much learning, has joined great experience in the chaſe.

'Stags,' he remarks, 'ſhed their horns ſoon-'er or later in the month of March, in propor-'tion to their ages. At the end of June, the 'horns of the old ſtag are long, and begin to 'tickle him. It is at this time alſo, that the ſtags

'begin

'begin to rub off the ſkin which covers their 'horns. At the commencement of Auguſt, 'their horns begin to aſſume that conſiſtence 'which they retain during the reſt of the year. 'On the 17th of October, the attendants of the 'Prince of Condé purſued a ſtag of ſix years 'old. This was the rutting ſeaſon, when the 'ſtags are much leſs vigorous; but we were 'ſurpriſed to find the animal fly at a great rate, 'and lead near ſix leagues from his harbour.

'When this ſtag was ſeized, we found that 'his horns were white, and ſprinkled with blood, 'as they ought to be at the time they are rub-'bed againſt the trees; and that they had ſtill 'rags of the ſkin which covers them during the 'time of their growth. His horns were diver-'ſified with many branches. All the hunters 'who were in at the death expreſſed their ſur-'priſe at theſe appearances. But their aſtoniſh-'ment was augmented, when they wanted to 'remove his teſticles; for none were to be found 'in the ſcrotum. But, after opening the body, 'two teſticles were diſcovered in the abdomen, 'about the ſize of filberds, and we clearly per-'ceived that he had never experienced the 'effects of the rut. It is well known, that du-'ring the months of June, July, and Auguſt, the 'ſtags are prodigiouſly loaded with fat, which 'is generally ſo entirely exhauſted about the 'middle of September, that nothing but the muſ-'cular fleſh remains. But this ſtag had loſt

'none

'none of his fat, becauſe he was never in a 'condition for rutting. He had ſtill another 'ſingularity; for in the right foot he wanted 'the middle bone, which, in the left, was half 'an inch long, and as large and pointed as a 'tooth-pick.

'It is well known, that a ſtag, caſtrated when 'he has no horns, never afterwards acquires 'them, and that, if the operation is performed 'when his horns are in perfection, they remain 'in the ſame ſtate during life. Hence it ap-'pears, that the very minute organs of genera-'tion above deſcribed were ſufficient to pro-'duce the annual change of horns; but that 'Nature has always proceeded ſlowly in the con-'formation of this animal; for we could diſco-'ver no marks of any accident which could in-'duce us to believe that the order of Nature had 'been deranged. It is therefore reaſonable to 'ſuppoſe, that this retardation proceeded from 'the imbecility of the organs of generation, 'which, however, were ſufficient to produce the 'fall and renewal of the horns, ſince the cab-'bage or burs demonſtrated, that, at the time 'this ſtag was killed, he had had horns an-'nually from the ſecond to the ſixth year.'

Theſe obſervations of the Marquis d'Ameza-ga ſeem to prove, in a ſtill ſtronger manner than any thing formerly remarked, that the fall and renovation of the ſtag's horns depend entirely on the preſence of the teſticles, and partly on their

their being more or leſs perfect; for, in the inſtance before us, the teſticles being imperfect and too ſmall, the horns, for that reaſon, in their growth, ſhedding, and renewal, were much later than in other ſtags.

Pontoppidan, when ſpeaking of the Norwegian ſtags, remarks, 'that they are only found 'in the dioceſes of Bergen and Drontheim; 'that they ſometimes ſwim in flocks acroſs the 'ſtraits between the continent and the neighbouring iſlands, reſting their heads upon each 'other's crupper; and that, when the chief of 'the file is fatigued, he retires behind to repoſe 'himſelf, and the moſt vigorous occupies his 'place *.'

It has been thought, that the ſtags of our foreſts might, by treating them with care and gentleneſs, as the Laplanders manage the rain-deer, be rendered domeſtic. Upon this ſubject, M. le Vicomte de Querhoënt has communicated to me the following fact. Stags were firſt brought to the iſle of France by the Portugueſe. They are ſmall, and of a grayer colour than thoſe of Europe, from whom, however, they derived their origin. When the French took poſſeſſion of this iſland, they found great numbers of theſe ſtags, of which they deſtroyed a part, and the remainder took refuge in the moſt retired places. They are now rendered domeſtic,

* Pontoppidan's Nat. Hiſt. of Norway.

and ſome of the inhabitants keep large flocks of them.

I have ſeen, at l'Ecole Veterinaire, a ſmall kind of ſtag, which was ſaid to have been brought from the Cape of Good Hope. Its ſkin was interſperſed with white ſpots, like that of the axis. It was called the *Hog-ſtag*, becauſe its legs were thicker, and it had not the ſame agility of body as the common kind. The figure of it is repreſented in the Plate. Its length from the muzzle to the extremity of the body, was only three feet four inches and a half; the legs were ſhort, and the feet and hoofs very ſmall; the colour yellow, mixed with white ſpots; the eye black and open, with large black hair on the upper eye-lid; the noſtrils black, with a blackiſh band at the corners of the mouth; the colour of the head the ſame with that of the belly, only mixed with gray, and brown on the chanfrin and ſides of the eyes; the ears very large, garniſhed on the inſide with white hairs, and with ſmooth hair mixed with yellow on the outſide. The horns of this ſtag were eleven inches ſeven lines in length, and ten lines thick. The top of the back was browner than the reſt of the body. The tail was yellow above and white below; and the legs were of a browniſh black colour *.

This

* Mr. Pennant, in his Synopſis of Quadrupeds, which was publiſhed in the year 1771, has deſcribed this animal as a diſtinct ſpecies of deer. It is ſurpriſing, that this circumſtance ſhould

This animal ſeems to approach nearer to the ſtag than the fallow-deer, as appears from the bare inſpection of his horns.

ſhould have eſcaped our author, eſpecially as the two deſcriptions vary in ſeveral particulars. Mr. Pennant's words are: 'PORCINE DEER, with ſlender trifurcated horns, thirteen 'inches long, ſix inches diſtant at the baſe; head ten inches 'and a half long: Body, from the tip of the noſe to the tail, 'three feet ſix inches: Height, from the ſhoulders to the hoof, 'two feet two inches, and about two inches higher behind: 'Length of the tail eight inches: Body thick and clumſy: 'Legs fine and ſlender: Colour on the upper part of the neck, 'body, and ſides, brown; belly and rump of a lighter colour. 'In poſſeſſion of Lord Clive; brought from ſome part of India; 'called, from the thickneſs of their body, *Hog Deer*.' *Synopſ. of Quad.* p. 52.

Plate LIII.

A Bell Sculp.t

STAG or HART

Plate LIV.

A. Bell Sculp.t

FEMALE RED DEER

Plate LV.

SMALL RED DEER

Plate LVI.

HOG STAG.

THE FALLOW DEER*.

NO ſpecies of animals makes ſo near an approach to another as the fallow deer to that of the ſtag. But, though their ſimilarity be great in every reſpect, they fly from each other, never intermix, and, of courſe, give riſe to no intermediate race. It is even rare to find fallow deer in a country much frequented by ſtags, unleſs they are induſtriouſly tranſported thither. Their nature ſeems to be leſs ruſtic and robuſt than that of the ſtag; and they are likewiſe leſs common in the foreſts. They are kept in parks,

* The horns of the fallow deer are palmated at their ends, and branched on the hinder ſide. It has two ſlender brow antlers, and above them two ſlender branches. The colour of this deer is various, being reddiſh, deep brown, white, or ſpotted.

In Greek πρoξ; in Latin, *Dama*; in Italian, *Daino*; in Spaniſh, *Daino*, *Corza*; in German, *Dam-hirſch*; in Swediſh, *Dof*, *Dof-hiort*; in Poliſh, *Lanii*.

Euriceros *Appiani*.

Platyceros *Plinii*.

Dama vulgaris; *Aldrov. Quad. Biſulc.* p. 741.

Dama vulgaris ſive recentiorum; *Geſner. Icon. Anim. Quad.* p. 51.

Cervus platyceros; *Raii Synopſ. Quad.* p. 85.

Cervus dama, cornibus ramoſis, recurvatis, compreſſis; ſummitate palmata; *Lynn. Syſt. Nat. p.* 93.

Cervus palmatus, Dama-cervus; *Klein. Quad. Hiſt. Nat.* p. 25.

 where

where they may be ſaid to be half domeſtic. More of them are reared in England than in any other country of Europe; and the Engliſh are extremely fond of their veniſon. The dogs alſo prefer the fleſh of this deer to that of all other animals; and, after they have once eat of it, they are extremely apt, in the chaſe of the ſtag or roe deer, to change their courſe when they perceive the ſcent of the fallow deer. In ſome provinces of France, and in the neighbourhood of Paris, there are fallow deer, as alſo in Spain and Germany. Thoſe of America were probably tranſported from Europe. It ſeems to be an animal peculiar to the temperate climates; for there are none in Ruſſia, and they are ſeldom met with in Sweden or other northern countries *.

The ſtags are more generally diffuſed over Europe; they are even found in Norway, and all the northern regions, Lapland perhaps excepted. They are alſo frequent in Aſia, eſpecially in Tartary †, and the northern provinces of China. They are likewiſe found in America; for thoſe of Canada ‡ differ from ours in the length of their horns only, and the direction of

* Linn. Faun. Suec.

† Deſcription de l'Inde, par Marc. Paul, liv. i. p. 38. Lettres Edifiantes, receuil 26. p. 371.

‡ The Canadian ſtag is preciſely the ſame with that of France; *Deſcription de la Nouv. France, par Charlevoix, tom.* xiii. p. 129.

their

their antlers *, which is ſometimes not ſtraight, as in the common ſtag, but turned backward, ſo that the end of each points to the ſtem of the horns. But this form of the horns is not abſolutely peculiar to the ſtag of Canada; for we find ſimilar horns engraven in *la Venerie de du Fouilloux* †; and thoſe of the Corſican ſtag have ſtraight antlers; which is a ſufficient proof that the Canadian ſtag is only a variety, to which ſtags of all countries are ſubject. There are likewiſe horns which have a number of antlers on their ſummits, in form of a crown. Theſe are rarely found in France; but, ſays Du Fouilloux ‡, they come from Ruſſia and Germany. This is another variety only, and not a ſpecies different from the common kind. Hence, in Canada, as well as in France, moſt ſtags have ſtraight antlers; but, in the former, they are larger and thicker; becauſe they find, in theſe uninhabited regions, more nouriſhment and repoſe than in populous countries. There are large and ſmall ſtags in America, as well as in Europe. But, however generally this ſpecies is diffuſed, it ſeems to be limited to cold and temperate climates. The ſtags of Mexico and South America, thoſe of Cayenne, thoſe called *Gange ſtags*, mentioned in M. Perrault's memoirs

* See the figure of the Canadian ſtag, in *l'Hiſt. des Animaux, par M. Perrault.*

† La Venerie de Jacques du Fouilloux, p. 22.

‡ Ibid. p. 20.

 under

under the name of *Sardinian hinds*, thoſe denominated *Cape ſtags*, and thoſe of Guiney and other warm countries, belong not to the common ſpecies, as will appear when the particular hiſtory of each is given.

As the fallow deer is leſs ſavage, more delicate, and approaches nearer to the domeſtic ſtate than the ſtag, he is alſo ſubject to a greater number of varieties. Beſide the common and the white fallow deer, there are ſeveral other varieties, as thoſe of Spain, which are nearly as large as the ſtag; but their neck is not ſo thick, and their colour is darker, with a blackiſh tail, not white below, and longer than that of the common kind; thoſe of Virginia, which are almoſt as large as thoſe of Spain, and remarkable for the great ſize of their genital organs: Others have a compreſſed forehead, with the ears and tail longer than thoſe of the common fallow deer, are marked with a white ſpot upon the hoofs of the hind feet; others are ſpotted with white, black, and yellow; and others are entirely black. All theſe have their horns flatter, broader, and better garniſhed with antlers than thoſe of the ſtag; they likewiſe incline more inwardly, and are more palmated at the points; and, when the horns are very ſtrong, the largeſt antlers are ſometimes terminated by ſmall palms. The tail of the common fallow deer is longer than that of the ſtag, and its hair is brighter. The horns of the fallow deer ſhed, like thoſe of the ſtag; but

but they fall off later, and are renewed nearly at the ſame time. Their rutting ſeaſon arrives fifteen days or three weeks after that of the ſtag. The males then bellow frequently, but with a low and interrupted voice. They are not ſo furious as the ſtag, nor exhauſt themſelves by rutting. They never depart from their own country in queſt of females; but they diſpute and fight for the poſſeſſion of their miſtreſſes. They aſſociate in herds, which almoſt always keep together. When there is a great number in one park, they generally form themſelves into two diſtinct troops, which ſoon become hoſtile, becauſe they both wiſh to occupy the ſame part of the incloſure. Each of theſe troops has its own chief, who marches foremoſt; and he is always the oldeſt and ſtrongeſt of the flock. The others follow him; and the whole draw up in order of battle, to force the other troop from the beſt paſture. The order with which theſe combats are conducted is very ſingular. They make regular attacks, fight with courage, mutually ſupport each other, and never think themſelves vanquiſhed by a ſingle check; for the battle is daily renewed, till the weaker are completely defeated, and obliged to remain in the worſt paſture. They love elevated and hilly countries. When chaſed, they run not out, like the ſtag, but double, and endeavour to conceal themſelves from the dogs by artifice, and by ſubſtituting another animal in their place. However, when

fatigued and heated, they take the water, but never attempt to crofs fuch extenfive rivers as the ftag. Thus, between the chafe of the fallow deer and ftag, there is no material difference. Their knowledge and inftincts, their fhifts and doublings, are the fame, only they are more frequently practifed by the fallow deer. As he is lefs enterprifing, and runs not fo far before the dogs, he has oftener occafion to change, or fubftitute another in his place, to double, return upon his former tracts, &c. which renders the hunting of the fallow deer more fubject to inconveniencies than that of the ftag. Befides, as he is fmaller and lighter, the impreffions of his feet upon the ground are flighter, and the branches he knocks off from the trees with his horns are fmaller. Hence the dogs are lefs apt to obferve the change, or fubftitution of another animal, and it is more difficult to bring them into the fcent when at fault.

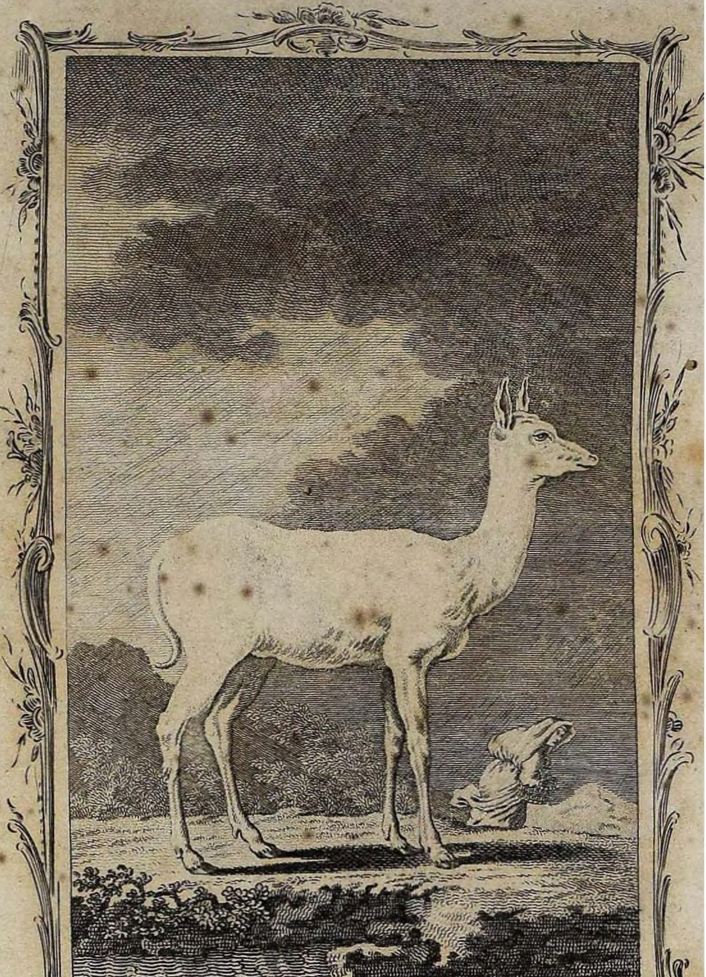
The fallow deer is very eafily tamed, and eats many fubftances which are rejected by the ftag. He likewife preferves his fat or venifon much better; for he is not rendered meagre by rutting, though followed by the longeft and fevereft winters; and he is nearly in the fame condition during the whole year. He browfes clofer than the ftag, which makes the trees or bufhes cut by him more difficult to fhoot than thofe cut by the ftag. The young fallow deer eat quicker, and with more avidity than the old. They rumi-

nate;

Plate LVII.

FALLOW DEER

Plate LVIII.



A Bell Sculpt

FEMALE FALLOW DEER

nate; they ſearch for the females in the ſecond year, and attach not themſelves to one, like the roe buck, but love variety, like the ſtag. The female goes with young eight months and ſome days. Like the hind, ſhe produces one, ſometimes two, and very rarely three fawns. They are capable of engendering and producing from the age of two to that of fifteen or ſixteen years. Laſtly, the fallow deer reſemble the ſtag in almoſt all their natural diſpoſitions and habits; the greateſt difference between theſe two animals conſiſts in the duration of their lives. We formerly remarked, from the teſtimony of huntſmen, that the ſtag lives thirty-five or forty years; and, from the ſame authority, we learn that the fallow deer live only about twenty years. As they are ſmaller, it is probable that their growth is ſooner accompliſhed than that of the ſtag; becauſe, in all animals, the duration of life is proportioned to the time of growing, and not to the time of geſtation; for here the time of geſtation is the ſame. Beſides, in other ſpecies, as that of the ox, though the time of geſtation be long, the duration of life is ſhort. Of courſe, we ought not to meaſure the duration of life by the time of geſtation, but by that of the growth, reckoning from birth, nearly to the full expanſion of the body *.

* For a few ſupplementary remarks on the fallow deer, ſee the article *Axis*.

THE ROE DEER*.

AS the ſtag is the nobleſt inhabitant of the wood, he occupies the deepeſt ſhades of the foreſt, and the moſt elevated ridges of thoſe mountains which are covered with lofty trees. The roe deer, as if inferior in ſpecies, contents

* The roe deer has ſtrong, upright, rugged, and trifurcated horns, from ſix to eight inches long. The length, from noſe to tail, is three feet nine inches: the height before, is two feet three inches; behind, two feet ſeven inches; the length of the tail is only one inch. The weight of a full grown buck is near 60 lb. The hair in ſummer is very ſhort and ſmooth. The ends of the hairs are of a deep red colour, and the bottoms of a dark gray. In winter, the hairs are very long, and hoary at the tips, except at the back, where they are often very dark. The legs are ſlender; and below the firſt joint of the hind legs there is a tuft of long hair. The rump, and under ſide of the tail are white; *Pennant, Synopſ. of Quad.* p. 53.

The name of the roe deer in Greek is Δορκας; in Latin, *Capreolus, Capriolus*; in Italian, *Capriolo*; in Spaniſh, *Zorlito, Cabronzillo montes*; in Portugueſe, *Cabra montes*; in German, *Rehe*; in Swediſh, *Ra diur*; in Daniſh, *Raa diur*; in Scots, *Roe-buck.*

Dorcas *Ariſtotelis*, Caprea *Plinii*.

Capra, Capreolus, ſive Dorcas; *Geſner. Icon. Anim. Quad.* p. 64.

Capriolus; *Johnſon, Hiſt. Anim. Quad. tab.* 33.

Dorcas Scotiæ perfamiliaris; *Charleton de Differentiis Animal.* p. 9. 12.

Capreolus vulgo. Cervulus ſilveſtris ſeptentrionalis noſtras; *Raii Synopſ. Quad.* p. 89.

Cervus capreolus, cornibus ramoſis, teretibus, erectis; ſummitate bifida, *Lynn. Syſt. Nat.* p. 94.

Cervus minimus, Capreolus, Cervulus, Caprea, cornibus brevibus, ramoſis, annuatim deciduis; *Klein. Quad. Hiſt. Nat.* p. 24.

himſelf

himſelf with a humbler reſidence, and generally dwells among the thick foliage of young bruſhwood. But, if he is inferior to the ſtag in dignity, ſtrength, and ſtature, he is endowed with more gracefulneſs, vivacity, and courage *. He is ſuperior in gaiety, neatneſs, and ſprightlineſs. His figure is more elegant and handſome. His eyes are more brilliant and animated. His limbs are more nimble, his movements quicker, and he bounds, ſeemingly without effort, with equal vigour and agility. His coat, or hair, is always clean, ſmooth, and gloſſy. He never wallows in the mire like the ſtag. He delights in dry and elevated ſituations, where the air is pureſt. He is likewiſe more crafty, conceals himſelf with greater addreſs, is more difficult to trace, and derives ſuperior reſources from inſtinct: For, though he has the misfortune to leave behind him a ſtronger ſcent than the ſtag, which redoubles the ardour and appetite of the dogs, he knows how to withdraw himſelf from their purſuit, by the rapidity with which he begins his flight, and by his numerous doublings. He delays not his arts of defence till his ſtrength fails him; but as ſoon as he finds that the firſt efforts of a rapid chaſe have been unſucceſsful, he repeatedly returns to his former ſteps; and, after confounding by theſe oppoſite movements,

* When the fawns of the roe deer are attacked, he defends them with courage, and, though ſmaller, he has ſtrength enough to combat a young ſtag, and put him to flight; *Nouv. Traité de la Venerie, p.* 178.

the

the direction he has taken, after intermixing the present with the past emanations from his body, he rises from the earth by a great bound, and, retiring to a side, he lies down flat on his belly, and in this immoveable situation, he allows the whole troop of his deceived enemies to pass very near him.

The roe deer differs from the stag and fallow deer in disposition, temperament, manners, and almost every natural habit. Instead of associating in herds, they live in separate families. The father, mother, and young, go together, and never mix with strangers. They are constant in their amours, and never unfaithful like the stag. As the females generally produce two fawns, the one male and the other female, these young animals, brought up and nourished together, acquire a mutual affection so strong, that they never quit each other, unless one of them meets with a misfortune, which never ought to separate lovers. This attachment is more than love; for, though always together, they feel the ardour of the rut but once a year, and it continues only fifteen days, commencing at the end of October, and ending before the fifteenth day of November. They are not then, like the stag, overloaded with fat: They have no strong smell, no fury, in a word, nothing that can change the state of their bodies. During this period, they indeed suffer not their fawns to remain with them. The father drives them off, as if he meant

to

to oblige them to yield their place to thofe which are to fucceed, and to form new families for themfelves. However, after the rutting feafon is paft, the fawns return to their mother, and remain with her fome time; after which they feparate for ever, and remove to a diftance from the place which gave them birth.

The female goes with young five months and a half, and brings forth about the end of April or beginning of May. The hinds, as formerly remarked, go with young above eight months; and this difference alone is fufficient to prove, that thefe animals are fo remote from each other in fpecies, as to prevent their ever intermixing or producing an intermediate race. By this difference, as well as thofe of figure and fize, they approach the goat as much as they recede from the ftag; for the goat goes with young nearly the fame time, and the roe deer may be regarded as a wild goat, which, feeding folely on wood, carries *wood* inftead of horns. The female, when about to bring forth, feparates from the male. To avoid the wolf, who is her moft dangerous enemy, fhe conceals herfelf in the deepeft receffes of the foreft. In ten or twelve days, the fawns acquire ftrength fufficient to enable them to follow her. When threatened with danger, fhe hides them in a clofe thicket, and, to preferve them, prefents herfelf to be chafed. But, notwithftanding all her care and anxiety, the young are fometimes carried off by men, dogs, or wolves.

wolves. This is indeed the time of their greatest deſtruction. Of this ſpecies, which is not very numerous, I know, from experience, that more are deſtroyed in the month of May, than during all the reſt of the year. I often live in a part of the country * where roe deer are greatly eſteemed. Many fawns are annually brought me alive by men, and others killed by dogs, without reckoning thoſe which are deſtroyed by wolves: And I have obſerved, during the ſpace of more than twenty-five years, that, as if there were a perfect equilibrium between the cauſes of deſtruction and renovation, their number is always nearly equal in the ſame diſtricts. It is not difficult to count them; for they are nowhere numerous, and they live ſeparately in diſtinct families: In a coppice, for example, of 100 acres, there will be one family, or from three to five individuals; for a female, which generally produces two fawns, ſometimes brings forth but one, and ſometimes, though very ſeldom, three. In another diſtrict, of double the extent, there will be ſeven or eight, that is, two families; and I have remarked, that each diſtrict always harbours an equal number, except when the winters have been extremely rigorous and long: In this caſe the whole family are deſtroyed; but it is replaced by another the following year; and thoſe diſtricts, for which they have a predilection, are always inhabited nearly by an

* At Montbard in Burgundy.

equal number. It is alledged, however, that, in general, their number is diminiſhing. There are whole provinces, it muſt be acknowledged, of France, where not one of them is to be found. Though common in Scotland *, there are none in England. They are very rare in Italy; and they are now more ſcarce in Sweden than formerly, &c. But this effect may have proceeded from the diminution of foreſts, or from ſome very ſevere winter, like that of the year 1709, which almoſt deſtroyed the whole roe deer of Burgundy; ſo that ſeveral years paſſed before the ſpecies was recruited. Beſides, they are not equally fond of every country; for, in the ſame countries, they prefer particular places. They love hills, or plains on the tops of mountains. They never ſtay in the deepeſt receſſes of the foreſts, nor in the middle of extenſive woods; but give the preference to the ſkirts or projections of woods which are ſurrounded with cultivated fields, and to open coppices which produce the berry-bearing alder, brambles, &c.

The fawns continue with their parents eight or nine months, and, when ſeparated, about the end of the firſt year of their age, their horns begin to appear in the form of two knobs much leſs than thoſe of the ſtag. There is ſtill a greater difference between theſe two animals: The horns of the ſtag ſhed in the ſpring, and are re-

* They are not very common in Scotland; for they exiſt nowhere but in what is called the *Highlands*, or northern mountains of Scotland.

newed

newed in ſummer; but thoſe of the roe deer fall off at the end of autumn, and are replaced in winter. Several cauſes concur in producing theſe different effects. In ſummer, the ſtag takes a great deal of nouriſhment, and grows exceedingly fat; he next exhauſts himſelf ſo much in the rutting ſeaſon, that the whole winter is neceſſary to recover his vigour. But, during this ſeaſon, inſtead of ſuperabundant nouriſhment, he is half ſtarved for want of ſubſiſtence, and, conſequently, his horns cannot begin to ſhoot till the ſpring, when his nouriſhment begins to be redundant. The roe deer, on the contrary, who is never ſo much waſted, has no occaſion for equal reparation; and, as he is never loaded with fat, as no change is produced in him by rutting, but continues always nearly the ſame, he has at all times a redundance of nouriſhment; ſo that, even in winter, and a ſhort time after rutting, he ſheds and renews his horns. Thus, in all theſe animals, the redundant organic nouriſhment, before it is determined to the ſeminal reſervoirs, and forms the ſeminal fluid, is transferred to the head, and manifeſts itſelf externally by the production of horns; in the ſame manner as, in man, the hair and the beard announce and precede the ſecretion of the ſeminal fluid: And it is apparent, that theſe vegetable productions, as they may be denominated, are formed of a redundant organic ſubſtance, but ſtill imperfect, and mixed with brute particles,

ſince

ſince they preſerve, in their growth and ſubſtance, the qualities of vegetables. But the ſeminal fluid, the production of which is not ſo early, is a matter purely organic, deprived entirely of its brute particles, and perfectly aſſimilated to the body of the animal.

When the roe deer has renewed his horns, he rubs them againſt the trees, like the ſtag, in order to tear off the ſkin with which they are covered; and this commonly happens in the month of March, before the trees begin to ſhoot. Hence it is not the ſap of the wood which colours the horns of the roe deer. However, the horns are brown when the animal is brown, and yellow when he is red; and, conſequently, the colour of the horns proceeds, as formerly remarked *, ſolely from the nature of the animal, and the impreſſion of the air. The ſecond horns of the roe have two or three antlers in each ſide; the third, three or four; the fourth, four or five, and they ſeldom have more. We diſtinguiſh the old ones by the thickneſs of the ſtems, the largeneſs of the bur, of the pearlings, &c. As long as the horns continue ſoft, they are extremely ſenſible: Of this I have had a ſtriking example: The young ſhoot of a roe buck's horn was cut off with a ball. The animal was ſtunned, and fell down as if he had been dead. The ſhooter, who was near, ſeized him by the foot; but the buck, ſuddenly recovering

* See above, hiſtory of the Stag, p. 103.

his

his ſenſes and his ſtrength, dragged the man, though he was ſtrong and alert, thirty paces into the wood. After killing him with a knife, we diſcovered that he had received no other wound. Beſides, it is well known, that flies are very troubleſome to the ſtag: When his horns are growing, he retires to the deepeſt parts of the wood, where the flies are leſs numerous; becauſe, when they fix upon the tender horns, the irritation they occaſion is inſupportable. Thus there is an intimate communication between the ſoft parts of the horns, and the whole nervous ſyſtem of the animal. The roe buck, who has nothing to apprehend from the flies, becauſe he renews his horns in winter, never retires in this manner; but he walks with caution, and carries his head low, leſt he ſhould touch the branches.

In the ſtag, the fallow deer, and roe buck, the frontal bone has two proceſſes, or eminences, on which the horns reſt. Theſe proceſſes begin to ſhoot at the age of five or ſix months, ſoon after acquire their full growth, and, inſtead of riſing higher in proportion as the animal advances in years, they annually ſink and diminiſh; ſo that, in old ſtags or roe bucks, the burs are nearly ſupported upon the frontal bone, the proceſſes of which having then become very broad and very ſhort. This is the moſt certain mark by which the age of theſe animals can be diſtinguiſhed. At firſt ſight this fact appears to be

be ſingular, but admits of an eaſy explanation, when it is conſidered, that the horns, ſupported by theſe proceſſes, preſs againſt them during the whole time of growth, which continues for ſeveral months every year: Hence theſe bones, however hard, muſt become broader, and ſink lower annually, by the great and long continued preſſure they receive from every renewal of the animal's horns. It is for the ſame reaſon, that, though the ſtems and burs, or rings, always grow thicker in proportion to the age of the animal, the height of the horns and the number of antlers diminiſh ſo faſt, that, when he is very old, they are only two thick knobs, with very ſmall antlers.

As the female roe goes with young five months and a half only, and as the growth of the fawn is more rapid than that of the ſtag, the duration of her life is much ſhorter, ſeldom extending, I imagine, beyond twelve or fifteen years. I have reared ſeveral of them; but could never preſerve them above five or ſix years. They are very delicate in the choice of their food, require a great deal of exerciſe, fine air, and much room, which is the reaſon why they are unable, except in the firſt years of their growth, to reſiſt the inconveniences of a domeſtic life. To make a male live comfortably, he muſt be furniſhed with a female, and a park of a hundred acres. They may be tamed, but can never be rendered obedient or familiar. They always retain a portion

tion of their natural wildneſs, are eaſily terrified, and then run with ſuch force and precipitation againſt the walls, that they often break their limbs. However tame they may be, they cannot be truſted; for the males particularly are ſubject to dangerous caprices; they take an averſion at certain perſons, and make furious attacks with their horns, the blows of which are ſufficient to knock a man to the ground, after which they continue to tread on him with their feet. The roe buck bellows not ſo frequently, nor with ſo loud or ſo ſtrong a voice, as the ſtag. The young ones utter a ſhort and plaintive cry, *mi....mi*, by which they indicate their want of food. This ſound is eaſily imitated; and the mother, deceived by the *call*, will come up to the very muzzle of the hunter's gun.

In winter, the roe bucks frequent the thickeſt coppices, and feed upon brambles, broom, heath, the catkins of the hazel, willow, &c. In ſpring, they repair to the more open bruſhwood, and eat the buds and young leaves of almoſt every tree. This warm food ferments in their ſtomachs, and intoxicates them to ſuch a degree that they are eaſily ſurpriſed. They know not where they are going, and not unfrequently come out of the wood, and ſometimes approach flocks of cattle, and the habitations of men. In ſummer, they dwell in the more elevated coppices, from which they ſeldom depart, except in very dry weather, when they go to drink at

ſome

ſome fountain; for, when the dews abound, or the leaves are moiſtened with rain, they never drink. They are delicate in the choice of their food; they eat not with avidity, like the ſtag, and they ſeldom approach the cultivated fields, becauſe they prefer the berry-bearing alder and bramble to grain or pot-herbs of any kind.

Though the fleſh of theſe animals be excellent food, yet it admits of much choice. The quality of their veniſon depends chiefly on the country they inhabit; and even the beſt countries produce good and bad kinds. The fleſh of the brown roe buck is finer than that of the red. All the males, after the age of two years, have hard and ill-taſted fleſh; but that of the females, though farther advanced in years, is more tender. The fleſh of the fawns, when very young, is looſe and ſoft; but at the age of eighteen months, it is in its higheſt ſtate of perfection. Thoſe which live in plains and valleys are not good; thoſe that come from moiſt countries are ſtill worſe; thoſe brought up in parks are inſipid; and, laſtly, there are no good roe bucks but thoſe who inhabit dry and elevated countries, interſperſed with hills, woods, cultivated and fallow lands, where they enjoy plenty of air, food, freedom, and ſolitude; for thoſe which have been often diſturbed are meagre, and the fleſh of thoſe that have been frequently hunted is dry and inſipid.

 This

This ſpecies, which is leſs numerous than that of the ſtag, and very rare in many parts of Europe, ſeems to be much more abundant in America, where there are two varieties, the red, which is the largeſt, and the brown, which has a white ſpot behind, and is ſmaller: And, as they are found in the northern as well as the ſouthern parts of America, it is probable that they differ more from each other than from thoſe of Europe. They are very common, for example, in Louiſiana *, and larger than thoſe of France. They are likewiſe found in Braſil; for the animal called *Cujuacu-apara* differs not more from our roe buck than the ſtag of Canada from our ſtag. There is indeed a little variation in the figure of the horns, as appears from Perrault's figure of the Canadian ſtag, compared with the deſcription and figure of the Braſilian ſtag given by Piſo. 'In 'Braſil,' ſays Piſo, 'there are roe bucks, of 'which ſome have no horns, and are called '*Cujuacu-été*, and others have horns, and are 'called *Cujuacu-apara*. The latter are ſmaller 'than the former; their hair is ſmooth, gloſſy, 'and mixed with brown and white, eſpecially 'when the animals are young; for the white is 'effaced with age. The foot is divided into two

* The fleſh of the roe buck is much uſed in Louiſiana. This animal is ſomewhat larger than the European kind, and his horns are ſimilar to thoſe of the ſtag; but he differs both in the coat and the colour. He ſerves the inhabitants in place of mutton; *Mem. ſur la Louiſiaine,* par *M. Dumont, tom.* i. *p.* 75.

'black

'black toes, upon each of which there is a ſmall-'er one ſuperinduced; the tail is ſhort; the 'eyes large and black; the noſtrils open; the 'horns are of a middle ſize, and fall off annual-'ly. The female goes with young five or ſix 'months. They may be tamed*,' &c. Margraave adds, 'that the horns of the *apara* have 'three branches, and that the inferior branch is 'longeſt, and divided into two.' From theſe deſcriptions, it is apparent, that the *apara* is only a variety of our roe buck; and Ray ſuſpects †, that the *Cujuaca-apara* is the male, and the *Cujuaca-été* the female, and that they both belong to the ſame ſpecies. I ſhould willingly aſſent to Mr. Ray's opinion, if Piſo had not expreſsly ſaid, that thoſe which have horns are ſmaller than the other kind. It is not probable that, at Braſil, the females of this ſpecies ſhould be larger than the males, ſince every where elſe they are ſmaller. At the ſame time, though I believe the *Cujuaca-apara* to be only a variety of our roe buck, to which we may alſo add the *Capreolus marinus* of Johnſton, I ſhall not decide concerning the *Cujuaca-été* till farther information be obtained.

* Piſon. Hiſt. Braſil. p. 98. † Raii Synopſ. Anim. Quad. p. 90.

SUPPLEMENT.

IT has frequently been mentioned, in my original work, that the common colours of wild animals are yellow, brown, and gray, and that the domeſtic ſtate gives riſe to white fallow deer, white rabbits, &c. I find, however, that Nature alone ſometimes produces the ſame effect upon wild animals. M. l'Abbé de la Villette informs me, that a man belonging to his brother's eſtate, near Orgelet in Franche-comté, brought him two old roe deers, one of which was of the common colour, and the other, being a female, was as white as milk, and had no black but on the hoofs and the extremity of the noſe *.

Roe bucks, ſimilar to thoſe of Europe, are found throughout all North America; only they are larger, and their ſize increaſes in proportion as the climate becomes more temperate. The roe bucks of Louiſiana are generally double the ſize of thoſe of France †. M. de Fontenelle adds, that they are eaſily tamed. In this he is ſupported by the evidence of M. Kalm, who mentions a roe buck which went daily to the

* Extract of a letter from M. l'Abbé de la Villette à M. de Buffon, dated Lon-le-Saumier, June 17, 1773.

† Extract of a letter from M. de Fontenelle, King's phyſician at New Orleans, to M. de Buffon.

wood

wood in queſt of food, and returned to his houſe in the evening*. But, in South America, this ſpecies is ſubject to great varieties. M. de la Borde, King's phyſician at Cayenne, ſays, 'that 'they have there four kinds of ſtags, called in-'diſcriminately, both males and females, by the 'name of *hinds*. The firſt kind, called *wood* or '*red hinds*, keep perpetually in the thickeſt parts 'of the foreſt, to avoid being tormented by the 'flies. This kind is taller and thicker than that 'called the *ſavanna hind*, and yet it is exceed-'ed in ſize by the *barallou hind*, which is the 'ſecond ſpecies, and of the ſame colour with the 'wood hind. When the males are old, their 'horns conſiſt of one branch only, and they at 'no period exceed four or five inches in height. 'Theſe barallou hinds are rare, and combat the 'wood hinds. In theſe two ſpecies, at the ſide 'of each noſtril, there are two conſiderable 'glands which ſecrete a white, fœtid humour.

'The third ſpecies is called the *ſavanna hind*. 'Its coat is grayiſh, and its limbs and body long-'er than the preceding. M. de la Borde was 'aſſured by the hunters, that the ſavanna hind 'had no glands on the noſtrils, and that it was 'leſs ſavage, and even ſo curious as to approach 'men.

'The fourth ſpecies is the ſavanna hind, 'which is ſmaller and more common than the 'other three. They are not ſo wild, and their

* Voyage de Pierre Kalm, tom. ii. p. 350.

'horns are longer and more palmated or branch-
'ed than thoſe of the other three kinds. They
'are called *ſavanna hinds*, becauſe they fre-
'quent the watery ſavannas, and lands covered
'with marſhes.

'Theſe animals feed upon the manioc, and
'often deſtroy the plantations. Their fleſh is
'very tender and well-taſted. Both the old and
'the young are uſed as food, and they are ſupe-
'rior to the European ſtags. They tame ſo eaſi-
'ly, that they run about the ſtreets of Cayenne,
'and go out of the town and return, without
'being afraid of any object. The females even
'go into the woods in queſt of wild males, and
'afterwards return with their fawns.

'The caricou is the ſmalleſt; his hair is of a
'whitiſh gray colour, and his horns are ſtraight
'and pointed. He belongs rather to the roe
'buck than to the ſtag. He never appears near
'inhabited places; but is very common in large
'woods. However, he is eaſily tamed; and
'the female brings forth only one fawn every
'year.'

If the above deſcriptions be compared with what is afterwards remarked in the hiſtory of the *Mazame*, or Mexican deer, it will appear, that all theſe pretended ſpecies of ſtags or hinds are only roe bucks, the varieties of which are more numerous in the New than in the Old Continent.

THE HARE*.

THE moſt numerous ſpecies of animals are by no means the moſt uſeful. Nothing can be more noxious than thoſe multitudes of rats, mice, locuſts, caterpillars, and other inſects, the fecundity of which, Nature ſeems rather to permit than to ordain. But the ſpecies of the

* The hare has two cutting teeth in each jaw; long ears; a ſhort tail; five toes before, and four behind. The ears are tipt with black; the eyes are large and prominent; the chin and whiſkers white; the hair on the face, back, and ſides, white at the bottom, black in the middle, and tipt with tawny red. The throat and breaſt are red, the belly white, and the tail black above, and white beneath. The feet are covered with hair, even at the bottom. A large hare weighs eight pounds and a half; its length, from the noſe to the tail, is two feet; *Pennant's Synopſ. of Quad.* p. 248.

In Greek, *Λαγως*; in Latin, *Lepus*, quaſi *Levipes*; in Italian, *Lepre*; in Spaniſh, *Leibre*; in Portugueſe, *Lebre*; in German, *Haſe*; in Swediſh, *Hare*; in Dutch, *Haſe*; in Poliſh, *Sajonz*; in Ruſs, *Zaitza*; in Arabian, *Ernab*, *Harneb*, *Arneph*; in Turkiſh, *Tauſan*; in Perſic, *Kargos*; at Braſil, *Thabiti*; in North America, *Soutanda*.

Lepus, *Raii Synopſ. Anim. Quad.* p. 204. *Plinii, lib.* viii. c. 55. *Geſner. Quad.* p. 605.

CHAR. GEN. Lepus, dentes primores II. ſuperiores duplicati; interioribus minoribus. CHAR. SPEC. Lepus timidus, cauda abreviata, auriculis apice nigris; *Lynn. Syſt. Nat. p.* 77.

Lepus vulgaris cinereus, cujus venatio animum exhilarat; *Klein. Quad. Hiſt. Nat. p.* 51.

Lepus caudatus ex cireneo rufus; *Briſſon. Quad. p.* 94.

hare

hare and the rabbit afford to man the double advantage arifing from number and utility. The hare is univerfally diffufed over all the climates of the earth. The rabbits, though originally natives of particular climates, multiply fo prodigioufly wherever they are tranfported, that, inftead of being rooted out, much art is neceffary to diminifh their number, which is fometimes incommodious.

When we reflect on the amazing fecundity of each fpecies, the rapid and prodigious multiplication of particular animals which come forth in myriads to ravage the earth, we are aftonifhed that they opprefs not Nature by their numbers, and, after defolating her productions, fall victims to the univerfal wafte they have created.

We view with terror the approach of thofe thick clouds, thofe winged armies of famifhed infects, which feem to threaten the whole globe with deftruction, and, lighting on the fruitful plains of Egypt, or of India, annihilate, in an inftant, the labours and the hopes of nations; and, fparing neither grain, nor fruits, nor herbs, nor leaves, nor roots, rob the earth of its verdure, and convert the richeft countries into deferts. We behold, defcending from the mountains of the north, innumerable multitudes of rats, which, like an animated deluge, overwhelm the plains, fpread over the fouthern provinces, and, after deftroying, in their paffage, every thing that lives or vegetates, finifh their noxious courfe,

by

by infecting the earth and the air with the putrid emanations of their dead carcasses. In the southern regions, we behold, issuing suddenly from the deserts, myriads of ants, which, like an inexhaustible torrent, press forward in continued columns, drive men and animals from their habitations, and never retire till they have produced an universal devastation: And, when men, like the animals, were half savage, and subject to all the laws and excesses of Nature, have not similar inundations of the human species taken place? Have not Normans, Huns, Goths, whole nations, or rather colonies of fierce and brutal people, without habitation or name, suddenly issued from their caverns, and with no other power but what arises from number, overturned cities and empires, and, after laying waste the earth, repeopled it with men equally new and barbarous as themselves?

These great events, these remarkable æras in the history of the human race, are, however, only slight vicissitudes in the ordinary course of animated Nature, which, in general, is always the same: Its movements are performed on two steady pivots, unlimited fecundity, and those innumerable causes of destruction which reduce the product of this fecundity to a determined measure, and preserve, at all periods, nearly an equal number of individuals in each species. And, as those enormous multitudes of animals, which sometimes suddenly appear, vanish without augmenting

menting the common ſtock, that of the human ſpecies, in like manner, continues always the ſame. The variations of the latter are only ſlower; becauſe, the life of man being longer than that of ſmall animals, more time is neceſſary to bring about the alternate changes of augmentation and diminution. But even this time, though it makes a deep impreſſion, becauſe it has been accompanied with horror and deſolation, is only an inſtant in the ſucceſſion of ages: For, in eſtimating the whole human ſpecies that ever exiſted, the number of men, like that of all other animals, ought, at all periods, to be nearly the ſame, ſince it depends upon the equilibrium of phyſical cauſes; and this equilibrium, to which every thing has been long reduced, cannot be infringed either by the efforts of men, or by any moral circumſtances, which are only particular effects of thoſe phyſical cauſes. Whatever care man may beſtow on his own ſpecies, he will never render it more numerous in one place, but at the expence of an equal diminution in another. When any portion of the earth is over ſtocked with men, they diſperſe or deſtroy each other, and often eſtabliſh ſuch laws and cuſtoms as give too great a check to this exceſs of multiplication. In remarkably prolific climates, as in China, Egypt, and Guiney, the inhabitants baniſh, mutilate, ſell, or drown their offspring: In France, and other Catholic countries, they are condemned to perpetual celibacy. Thoſe who exiſt, uſurp

eaſily

eaſily the rights of thoſe who have no exiſtence: Regarding themſelves as neceſſary beings, they annihilate thoſe which are contingent, and, for their own convenience, ſuppreſs future generations. The ſame reſtrictions are laid upon man, without his perceiving it, as are impoſed upon the other animals: We cheriſh or multiply, neglect or deſtroy our ſpecies, according to the advantages or inconveniences which reſult from them: And, as all moral effects depend upon phyſical cauſes, which, ever ſince the earth acquired its conſiſtence, are fixed and permanent, the number of the human ſpecies, as well as that of all other animals, muſt likewiſe be conſtant and unalterable. Beſides, this fixed ſtate, this conſtant number, imply not abſolute quantities. All phyſical and moral cauſes, and the effects that reſult from them, are balanced, and comprehended within certain limits, which are more or leſs extended, but never to ſuch a degree as to deſtroy the equilibrium. As the whole univerſe is in perpetual motion, as all the powers of matter mutually act upon and counterbalance each other, every effect is produced by a kind of oſcillations, to the middle points of which we refer the ordinary courſe of Nature, and the extremes are thoſe effects which are fartheſt removed from that courſe. Hence we find, that, both in animals and vegetables, an exceſſive multiplication is commonly followed by ſterility: Plenty and ſcarcity alternately ſucceed each other, and

often

often ſo quickly, that a tolerable judgment may be formed of the produce of one year by that of the preceding year. Apple, plumb, oak, beech, and moſt fruit and foreſt trees, produce abundantly but once every other ſeaſon. When caterpillars, flies, field mice, and other animals multiply to exceſs in one year, their number is greatly diminiſhed the following year. If inſects, during theſe fertile ſeaſons, multiplied the next in proportion to their numbers, the whole fruits of the earth, all our domeſtic animals, and even man himſelf, would fall victims to their rapacity. But the cauſes of deſtruction and ſterility immediately ſucceed thoſe which give riſe to a redundant multiplication. Neither is this deſtruction occaſioned by contagion: It is a neceſſary conſequence of too great a maſs of animated matter collected in one place. In every ſpecies, there are particular cauſes of death, as ſhall afterwards be ſhown, which are ſufficient to compenſate the exceſs of preceding generations.

I muſt again remark, that this reaſoning is not to be underſtood in an abſolute or even in a ſtrict ſenſe, eſpecially with regard to thoſe ſpecies which are not left entirely to the guidance of Nature. Man, and the other animals he has taken under his protection and care, are more abundant than they would be without that attention he beſtows on them. But, as this care has alſo its limits, the augmentation which reſults from it has long been confined by immutable boundaries. And

 though,

though, in civilized countries, the human ſpecies, as well as domeſtic animals, are more numerous than in other climates, they never multiply to exceſs; becauſe, whenever they become incommodious, their number is diminiſhed by the ſame power that produced them.

In diſtricts appropriated to the pleaſures of the chaſe, four or five hundred hares are ſometimes killed in the courſe of a ſingle day's ſport. The multiplication of theſe animals is very rapid. From the firſt year of their exiſtence, they are always in a condition for propagating. The females go with young only thirty or thirty-one days. They bring forth three or four at a litter, and, immediately afterwards, they receive the male. They likewiſe admit him during the time of geſtation, and, from a peculiar conformation of their organs, they have frequent ſuperfœtations: For the uterus is only a continuation of the vagina, and has neither neck nor orifice, as in other animals; but, in each horn, there is an orifice opening into the vagina, which dilates during the time of bringing forth. Thus the horns are two diſtinct uteri, which can act independent of each other; ſo that the females of this ſpecies are capable of conceiving and bringing forth, at different times, by each uterus; and, conſequently, ſuperfœtations muſt be as frequent among theſe animals as they are rare in thoſe which have not a double organ.

It

It is apparent, therefore, that the female hares may be in feafon and impregnated at all times. Another fingularity in their ftructure proves them to be equally lafcivious as they are fertile. The glans of the clitoris is prominent, and nearly as large as that of the male penis; and, as the vulva is hardly vifible, and the male, when young, has neither fcrotum nor tefticles on the outfide of the body, it is often difficult to diftinguifh the females from the males. This peculiarity of ftructure has rifen to the following notions: That hermophradite hares are very common; that the males fometimes bring forth young; and that fome are alternately males and females, and perform the functions of either fex, becaufe the females, being more ardent than the males, often mount upon them, and becaufe the external refemblance is fo great, that, unlefs narrowly examined, the one may eafily be miftaken for the other.

The young, when brought forth, have their eyes open. The mother fuckles them about twenty days; after which they feparate, and procure their own food. They never remove far from each other, nor from the place where they are littered. They live, however, in folitude, each making a form or feat at the diftance of fixty or eighty paces. Thus, when we meet with one young hare, we are almoft certain of finding two or three others in the neighbourhood. They feed more in the night than in the day; they

they eat herbs, roots, leaves, fruit, grain, and prefer thofe plants which have milky juices. During winter, they gnaw the bark indifcriminately from all trees, except that of the alder and lime, which they never touch. When reared in houfes, they are fed with lettuce and pot-herbs: But the flefh of thofe fed hares has always a bad tafte.

During the day, they fleep or repofe in their forms, and are active only in the night, when they move about, feed, and copulate. When the moon fhines, they are feen playing together, leaping and chafing each other. The fmalleft motion, or the noife of a falling leaf, is fufficient to terrify and make them fly different ways.

Some authors maintain, that hares chew the cud. But I cannot affent to this opinion; becaufe they have one ftomach only, and its conformation, as well as that of the other inteftines, are totally different from thofe of ruminating animals. The cæcum of the latter is fmall, but that of the hare is very large; and, when to the capacity of the ftomach this large cæcum is added, it is eafy to perceive that the hare, by taking a great quantity of aliment, may live upon herbs alone, like the horfe and afs, which have alfo a large cæcum, and but one ftomach, and, confequently, are incapable of ruminating.

Hares fleep much, but always with open eyes. They have neither eye-lids nor cilia, and their

eyes ſeem to be bad. But, as a remuneration they have an acute ſenſe of hearing, and enormous ears in proportion to the ſize of their bodies. Theſe long ears they move with great facility, and employ them as a rudder to direct their courſe, which is ſo rapid, that they outſtrip all other animals. As their fore legs are much ſhorter than the hind legs, they run more eaſily up than down hill; hence, when purſued, they always take to the higheſt grounds. Their running is a kind of gallop, a ſucceſſion of quick leaps. Their motion is not accompanied with noiſe; becauſe their feet are covered, both above and below, with hair. They are perhaps the only animals which have hair in the inſide of the mouth.

The duration of their life, like that of other animals, is proportioned to the time of their growth, which is completed in one year, and they live about ſeven. The males are ſaid to live longer than the females. They paſs their days in ſolitude and ſilence; and their voice is never heard but when ſeized or wounded: It is a loud, ſharp cry, having ſome reſemblance to the human voice. They are not ſo ſavage as their manners and habits would indicate: They are gentle, and ſuſceptible of a kind of education. Though eaſily tamed, and even rendered careſſing, they never acquire that attachment which is neceſſary to make them domeſtic; for, when taken young, and brought up in the houſe, they

take the firſt opportunity of regaining their liberty, and of flying to the fields. As they have a fine ear, ſit ſpontaneouſly on their hind legs, and uſe the fore legs as a kind of hands, they have been trained to beat a drum, to perform geſtures in cadence, &c.

In general, the hare wants neither inſtinct ſufficient for his own preſervation, nor ſagacity for eſcaping his enemies. He forms a ſeat or neſt: In winter he chooſes ſituations expoſed to the ſouth, and in ſummer to the north. With a view to deceive, he conceals himſelf between clods or hillocks of the ſame colour with that of his own hair. 'I have ſeen,' ſays Fouilloux, 'a hare ſo ſagacious, that, after hearing 'the hunter's horn, he ſtarted from his form, 'and, though at the diſtance of a quarter of a 'league, went to ſwim in a pool, and lay 'down on the ruſhes in the middle of it, 'without being chaſed by the dogs. I have 'ſeen a hare, after running two hours before 'the dogs, puſh another from his ſeat, and take 'poſſeſſion of it. I have ſeen others ſwim over 'two or three ponds, the narroweſt of which was 'eighty paces broad. I have ſeen others, after a 'two hours chaſe, run into a ſheep-fold, and lie 'down among the ſheep. I have ſeen others, 'when hard puſhed, run in among a flock of 'ſheep, and would not leave them. I have ſeen 'others, after hearing the noiſe of the hounds, 'conceal themſelves in the earth. I have ſeen

 'others

'others run up one ſide of a hedge and return by
'the other, when there was nothing elſe between
'them and the dogs. I have ſeen others, after
'running half an hour, mount an old wall, ſix
'feet high, and clap down in a hole covered with
'ivy. Laſtly, I have ſeen others ſwim over a
'river of about eighty paces broad, more than
'twice in a length of two hundred paces.'

But theſe facts unqueſtionably exhibit the greateſt efforts of their inſtinct; for their ordinary reſources are not ſo fine nor ſo complicated: When purſued, they firſt run with rapidity, and then double or return upon their former ſteps. They always run in the direction that the wind blows. The females run not ſo far from their place of ſtarting as the males; but they double oftener. In general, hares hunted in the place that gave them birth, never remove to a great diſtance from it, but return to their form; and, if chaſed two days ſucceſſively, they perform, in the ſecond day, the ſame doublings they had obſerved the day before. When a hare runs ſtraight out, and to a great diſtance from the place he ſtarted, it is a proof that he is a ſtranger. It often happens, that male hares, eſpecially during the moſt remarkable period of rutting, which is in the months of January, February, and March, when they have few females near them, perform journeys of ſeveral leagues in queſt of mates; but, as ſoon as they are ſtarted by the dogs, they fly back to the place of their nativity,

nativity, and never more return. The females wander not in this manner. Though longer than the males, they are weaker and leſs agile: But they are more timid; for they never allow the dogs to come ſo near their ſeats as the males, and their doublings are more frequent. They are alſo more delicate, and more ſuſceptible of impreſſions from the weather. They avoid water and dews. But there are males called *meaſled hares*, which love marſhy and watery grounds. The fleſh of theſe hares is bad taſted; and, in general, the fleſh of all hares which inhabit valleys is whitiſh and inſipid; but thoſe of elevated or hilly countries, where the wild thyme and other ſavory herbs abound, are extremely good. It has even been remarked, that thoſe which live in the low woody grounds of the ſame country, are not near ſo good as thoſe that inhabit the ridges of hills, or the cultivated fields, and vineyards; and that the fleſh of the female is always more delicate than that of the male.

The nature of the ſoil has a conſiderable influence on the hare, as well as upon all other animals. The mountain hares are larger than thoſe of the plains, and likewiſe of a different colour. The former are browner, and have more white under the neck than the latter, which are almoſt red. In high mountains, and in northern regions, they become white during winter, and reſume their uſual colour in the ſummer. Only a few, and perhaps theſe are very old, continue

 white;

white; for they all turn more or leſs white with age. The hares of Italy, Spain, and Barbary, are ſmaller than thoſe of France and other northern nations. According to Ariſtotle, they are ſmaller in Egypt than in Greece.

Hares are equally diffuſed over all climates. They abound in Sweden, Denmark, Poland, Ruſſia, France, Britain, Germany, Barbary, Egypt, the iſlands of the Archipelago, and particularly Delos *, which was called *Lagaia* by the ancient Greeks, becauſe of the number of hares which were found there. Laſtly, hares are numerous in Lapland †, where they are white for ten months in the year, and reſume their proper colour during the two warm months of ſummer only. Hence it appears, that every climate is nearly equal to theſe animals. It has, however, been remarked, that they are leſs frequent in the Eaſt than in Europe, and that they are very rare in South America, though they again make their appearance in Virginia, Canada ‡, in the neighbourhood of Hudſon's-bay §, and the ſtraits of Magellan. But theſe North American hares are perhaps a different ſpecies from ours; for travellers inform us, that they are not only much larger, but that their fleſh is white, and of

* Deſcript. des Iſles de l'Archipel. de Dapper, p. 375.

† Les Oeuvres de Regnard, tom. i. p. 180. Il Genio Vagante, tom. ii. p. 46. Voyage de la Martiniere, p. 74.

‡ La Relation de la Gaſpeſie, par le P. le Clercq, p. 488, &c.

§ Le Voyage de Robert Lade, tom. ii. p. 317.

a different taſte from that of the common kind *. They add, that the hair of the North American hares never falls off, and that their ſkins are excellent furs. In exceſſively hot countries, as Senegal, Gambia, Guiney †, and particularly in the cantons of Fida, Apam, Agra, and ſome other regions ſituated under the Torrid Zone, both in Africa and America, as in New Holland, and the iſthmus of Panama, there are animals which have been called *hares* by travellers, but are rather a ſpecies of rabbit ‡; for the rabbit is a native of warm climates, and is never found very far to the north; but hares are larger and ſtronger in proportion to the coldneſs of the country they inhabit.

This animal, though ſo much in requeſt for the tables of Europeans, is not reliſhed by the Oriental nations. The fleſh of the hare, it is true, as well as that of the hog, was interdicted by the law of Mahomet, and ſtill more anciently by the Jewiſh law. But it was much eſteemed by the Greeks and Romans: *Inter quadrupedes, gloria prima Lepus* §. It muſt, indeed, be allowed, that not only the fleſh, but the blood of this animal, is excellent. The fat contributes nothing to the delicacy of the fleſh; for the hare, in his natural ſtate of perfect liberty, is

* La Suite des Voyages de Dampier, tom. v. p. 167.

† L'Hiſt. Gen. des Voyages, par M. l'Abbe Prevot, tom. iii. p. 235. 296.

‡ Dampier, vol. iv. p. 111. Wafer, tom. iv. p. 224.

§ Martial.

never fat; but when fed in the houſe, he often dies merely by the load of fat he acquires.

The hunting of the hare is the amuſement, and not unfrequently the ſole occupation of the idle: As it requires little apparatus or expence, and is even uſeful, it is a diverſion univerſally agreeable. In the mornings and evenings, the hunter watches, at the edges of the wood, the going out or returning of the hares. During the day, he ſearches for them in their forms. When the air is clear and the ſun brilliant, an expert hunter will diſcover, at a conſiderable diſtance, a hare that has been chaſed, by the fumes which ariſe from its body. Conducted by this mark, I have ſeen men whoſe eyes were accuſtomed to this kind of obſervation, part from their company, and go to the diſtance of half a league to kill a hare in its ſeat. Hares allow a very near approach, if they are not advanced upon directly, but by a winding and ſeemingly inattentive motion. They are more afraid of dogs than of men, and ſtart ſooner when they hear or perceive a dog. Though the hares run faſter than the dogs, yet, as they never fly ſtraight out, but double about the place where they were ſtarted, the greyhounds, who hunt more by the eye than the ſcent, generally overtake and kill them. In ſummer, they frequent the fields, the vineyards in autumn, and the woods or coppices in winter; and, in all ſeaſons, they may be raiſed and chaſed by hounds. They may alſo be taken

taken by birds of prey. A perpetual war is carried on againſt them by owls, buzzards, eagles, foxes, wolves, and men. So numerous are their enemies, that they eſcape by chance only, and are rarely allowed to enjoy the ſmall portion of time allotted them by Nature.

SUPPLEMENT.

IT is univerſally known, that hares make forms, and burrow not in the ground like rabbits. But I have been informed by an able naturaliſt, M. Hettlinger, ſuperintendant of the Pyrennean mines, that, in the mountains in the neighbourhood of Baigory, the hares often make holes in the clefts of rocks, which is not conſidered as remarkable *.

It is likewiſe well known, that hares do not willingly inhabit places which are frequented by rabbits; but it alſo appears, that rabbits do not multiply in countries where hares are numerous: 'In Norway,' ſays Pontoppidan, 'rabbits are 'found only in a few places; but hares are 'very frequent. Their hair, which is brown 'and gray during ſummer, becomes white in 'winter. *Like cats, they take and eat mice*, and 'are of a ſmaller ſize than thoſe of Denmark †.'

* Letter from M. Hettlinger to M. de Buffon, dated at Baigory, July 16, 1774.

† Pontoppidan's Nat. Hiſt. of Norway.

That

That hares eat mice, is extremely improbable: But it is not the only marvellous or falſe fact related by the good Biſhop of Bergen.

'The hares of the iſle of France,' remarks M. le Vicomte de Querhoënt, 'are not larger 'than French rabbits. Their fleſh is white, and 'they burrow not in the ground. They are very 'numerous; their hair is ſmoother than that of 'our hares; and they have a large black ſpot 'on the hind part of the head and neck.'

M. Adanſon likewiſe aſſerts, that the hares of Senegal are not entirely ſimilar to thoſe of France; that they are ſomewhat leſs; that their colour is a mixture between that of the hare and the rabbit; and that their fleſh is exquiſitely delicate *.

* Voyage au Senegal, par M. Adanſon, p. 25.

Plate LXI.

A. Bell Sculp.

WILD RABBIT

THE RABBIT*.

AS the hare and rabbit, though very ſimilar both in external form and internal ſtructure, never intermix, they conſtitute two diſtinct ſpecies. However, as it has been maintained by hunters †, that the male hares, in the rutting ſeaſon, purſue and cover female rabbits, I endeavoured to diſcover what would reſult from this union. For this purpoſe, I reared together male rabbits and female hares, and female rabbits and male hares. But nothing was produced from theſe trials. I only learned from them, that

* The ears of the common rabbit are almoſt naked. The colour of the fur, in a wild ſtate, is brown; that of the tail is black above and white beneath. In a domeſtic ſtate, the colour varies from black to pied and perfectly white; the eyes of the laſt are of a fine red; *Pennant's Synopſ. of Quad.* p. 251.

In Greek, Δασυπους; in Latin, *Cuniculus*; in Italian, *Coniglio*; in Spaniſh, *Conejo*; in Portugueſe, *Coëlho*; in German, *Canichen*; in Swediſh, *Kanin*; in old French, *Connin*, *Connil*.

Lepus vel Lepuſculus Hiſpanicus; *Geſner. Icon. Anim. Quad.* p. 1[illegible]5.

Cuniculus, *Raii Synopſ. Quad.* p. 205. *Plinii, lib.* viii. *c.* 55.

CHAR. GEN. Dentes primores II. ſuperiores duplicati; interioribus minoribus.—CHAR. SPEC. Lepus cuniculus, cauda abbreviata, auriculis nudatis; *Linn. Syſt. Nat.* p. 251.

Lepuſculus, cuniculus terram fodiens; *Klein. Quad. Hiſt. Nat.* p. 52.

Lepus caudatus pilis tenuiſſimis et longiſſimis toto corpore veſtitus; *Briſſon. Quad.* p. 141.

† La Venerie de du Fouilloux, p. 100.

theſe

these animals, though very ſimilar in form, are ſo different in their natures, as to be incapable of producing mules. I put a young hare and a young female rabbit in the ſame apartment; but they lived not together three months. As ſoon as they acquired a little ſtrength, they became mortal enemies, and their continual wars terminated in the death of the hare. Of two male hares farther advanced in life, which I confined ſeparately with a female rabbit, one ſuffered the ſame fate; and the other, which was very ſtrong, and very ardent, perpetually tormented the rabbit with attempts to cover her, and at laſt killed her by wounds, or by too violent careſſes. I made ſimilar trials with three or four male rabbits, and an equal number of female hares; but the latter died in a ſtill ſhorter time. Though nothing was produced, I am inclined to think that they ſometimes actually coupled. It is certain, at leaſt, that, notwithſtanding the reſiſtance of the female, the male was gratified: And it was more reaſonable to expect fruit from theſe mixtures than from that of the rabbit and hen, which, according to a certain author, would produce *chickens covered with hair, or rabbits covered with feathers* *. This ridiculous concluſion was drawn from a vicious male rabbit, which, having no female, uſed a hen in the ſame manner as he would any other moveable. It was

* See l'Art d'Elever des Poulets.

extremely

extremely improbable, that two ſpecies, ſo remote from each other, ſhould be fertile, while nothing reſults from the union of the hare and rabbit, whoſe ſpecies are ſo very analogous.

The fecundity of the rabbit is ſtill greater than that of the hare. Without believing, with Wotton, that, from a ſingle pair put upon an iſland, ſix millions were found at the end of one year, it is certain that theſe animals multiply ſo prodigiouſly in a country which is commodious for them, that the produce of the earth is not ſufficient to afford them ſubſiſtence. They devour herbs, roots, grain, fruits, and even young trees and ſhrubs; and if not furniſhed with dogs and ferrets, the inhabitants would be obliged to deſert theſe countries. The rabbit not only produces more frequently, and in greater number than the hare, but has likewiſe more reſources for eſcaping his enemies. He eaſily abſtracts himſelf from the obſervation of man. The holes which he digs in the earth, where he retires during the day, and impregnates his mate, protect him from the ravages of the wolf, the fox, and birds of prey. Here the whole family live in perfect ſecurity. The females nouriſh their young about two months, and never allow them to go out of their retreat till they are able to ſhift for themſelves. By this means, they avoid all the dangers of youth; while more hares, on the contrary, are deſtroyed during this period than in all the after-part of their lives.

This

This management is alone ſufficient to prove that the rabbit is ſuperior in ſagacity to the hare. The ſtructure of both is the ſame, and might enable them equally to dig retreats in the earth. Both are equally timid; but the talents of the one being weaker than thoſe of the other, he contents himſelf with forming a ſeat on the ſurface of the ground, where he remains perpetually expoſed; while the rabbit, endowed with a ſuperior inſtinct, digs for himſelf an aſylum in the earth. This labour is unqueſtionably the effect of ſentiment; for domeſtic rabbits never give themſelves the trouble of digging. They diſpenſe with digging retreats, for the ſame reaſon that domeſtic birds diſpenſe with building neſts, becauſe they are equally ſheltered from the inconveniences and dangers to which wild birds and wild rabbits are continually liable. It has often been remarked, that, when a warren is attempted to be repleniſhed with domeſtic rabbits, both they and their offspring remain, like the hares, upon the ſurface; and that they never begin to dig holes for their protection, till after they have endured many hardſhips, and paſſed through ſeveral generations.

The colours of the domeſtic rabbit vary like thoſe of all other domeſtic animals; for we have white, black, brown, and ſpotted rabbits. The black rabbits are rarer than the white, brown, or variegated kinds. All wild rabbits are brown; and even among the domeſtic ones, it is ſtill the predomi-

predominant colour; for in every litter, though both male and female be white, or both black, or the one white and the other black, ſome of the young are always brown. It is ſeldom that above two or three reſemble the parents. But the brown rabbits, though in a domeſtic ſtate, generally produce young of their own colour only; and it is very rare, and as by accident, that they bring forth white, black, or mixed kinds.

At the age of five or ſix months, theſe animals are capable of procreating. They are ſaid to be conſtant in their amours; and after attaching themſelves to a particular female, generally never quit her. The female is almoſt perpetually in a condition for receiving the male. She goes with young thirty or thirty-one days, and produces from four to eight at a litter. Like the female hare, ſhe has a double uterus, and conſequently may bring forth at two different times. Superfœtations, however, ſeem to be leſs frequent in this ſpecies than in that of the hare. This circumſtance may, perhaps, be owing to the conſtancy of the females, and to their indulging in fewer adventures and unſeaſonable embraces.

Some days before bringing forth, they dig a new hole, not in a ſtraight line, but angular; at the bottom of which they make an excavation; and they pull great quantities of hair off their bellies, and make a bed of it for the reception of their young. During the two firſt days, they never

never leave their offspring: They never go out but when preſſed with hunger, and return as ſoon as they have filled their ſtomach, which they do with ſurpriſing quickneſs. In this manner they tend and ſuckle their young for more than ſix weeks, during which the father has no knowledge of them. He never enters the hole dug by the mother; and the female, when ſhe leaves her young, frequently ſhuts up the mouth of the hole with earth diluted in her own urine. But, when they begin to come to the mouth of the hole, and to eat groundſel, or other herbs, preſented to them by the mother, the father ſeems to know them: He takes them between his paws, ſmooths their hair, and licks their eyes. Each of them, one after another, equally partakes of his care and attention. He receives, at the ſame time, many careſſes from the mother; and, in a few days afterward, ſhe is generally impregnated.

I received the following remarks from M. le Chapt du Moutier, who has amuſed himſelf for ſeveral years in rearing rabbits: 'I began,' ſays he, 'with only one male and one female. The 'male was perfectly white, and the female 'brown. In their poſterity, which was very numerous, the brown greatly predominated; there 'was a conſiderable number of them white and 'mixed, and ſome black. When the female is 'in ſeaſon, the male ſeldom quits her. His conſtitution is ſo vigorous and ardent, that I have

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'seen him embrace the female five or six times 'in less than an hour. In the time of coition, 'the female lies flat on her belly, with her four 'paws stretched out; and she utters small cries, 'which rather indicate pleasure than pain. Their 'manner of coupling resembles that of the cats, 'with this difference, that the male bites the 'neck of the female with less violence. These 'animals pay much respect to their fathers, 'which I discovered by the great deference my 'rabbits entertained for their original father, who 'was easily distinguished by his whiteness, being 'the only male of this colour which I preserved. 'The family soon increased: But those who had 'likewise become fathers, were always subordi-'nate to their first sire. Whenever they fought, 'either for females or food, the grandfather ran 'up to them with full speed; and, as soon as they 'perceived him, order was re-established. If 'he surprised them in the act, he first separated 'the combatants, and then gave them an exem-'plary punishment. I had still a farther proof 'of his dominion over his posterity. Having 'accustomed them to retire into their apartment 'upon the blowing of a whistle, when I gave 'the signal, however distant they might be, the 'grandfather put himself at their head, and, 'though he arrived first, he allowed them all to 'pass before, and entered last himself. I fed 'them with bran, hay, and a good deal of juni-

 'per;

'per; of this laſt they eat the berries, the leaves, 'the bark, and leave nothing but the wood. 'This food gave a fine flavour to their fleſh, 'and made it equally good as that of the wild 'rabbit.'

Theſe animals live eight or nine years. As they paſs the greateſt part of their lives in holes, where they enjoy perfect tranquillity, they grow much fatter than hares. Their fleſh differs likewiſe both in colour and taſte. The fleſh of the young rabbit is very delicate; but that of the old is dry and hard. As I formerly remarked, they are originally natives of warm climates. They were known to the Greeks *; Greece and Spain † ſeem to be the only places in Europe where they anciently exiſted. From thence they were tranſported into more temperate regions, as Italy, France, Germany, Britain, where they are now naturalized. But, in very cold countries, as Sweden ‡, and other parts of the north, they cannot be reared in houſes, and they periſh when abandoned to the fields. But, on the contrary, they are fond of exceſſive heat; for we find them in the moſt ſouthern parts of Aſia and Africa, as along the Perſic Gulf §, the bay of

* Ariſt. Hiſt. Animal. lib. i. cap. 1.
† Plin. Hiſt. Nat. lib. viii.
‡ Linnæi Faun. Suec. p. viii.
§ L'Hiſt. Gen. des Voyâges, par M. l'Abbé Prevôt, tom. ii. p. 354.

Saldana,

Plate LXII.

HARE

Plate LXIII

A. Bell Sculpt.

DOMESTIC RABBIT

Plate LXV

A. Bell Sculp.

RABBIT of ANGORA

Plate LXIV.

A. Bell Sculpt.

SILVER HAIRD RABBIT

Plate LXVI.

RABBIT of ANGORA
Casting its Hair

Saldana *, in Lybia, Senegal, and Guiney †. They are likewiſe found in our American iſlands ‡, where they have been brought from Europe, and have ſucceeded extremely well.

* L'Hiſt. Gen. des Voyages, par M. l'Abbé Prevôt, tom. ii. p. 449.

† Leon. Afric. de Afric. deſcript. part ii. p. 257. Le Voyage de Guill. Boſman, p. 252.

‡ L'Hiſt. Gen. des Antilles, par le P. du Tertre, tom. ii. p. 297.

OF CARNIVOROUS ANIMALS.

HITHERTO we have treated of uſeful animals only. The noxious ſpecies are few in number; and though, upon the whole, what is hurtful ſeems to abound more than what is ſerviceable, yet every thing is well ordered; for in the phyſical world, evil is ſubſervient to good, and there is nothing really noxious in Nature. If the deſtruction of animals be hurtful, is not man, conſidered as forming a part of the general ſyſtem of animation, the moſt noxious and pernicious of all beings? He alone ſacrifices and annihilates more individuals than the whole carnivorous tribes. The latter are hurtful only, becauſe they are rivals to man, becauſe they have the ſame appetites, the ſame taſte for animal food, and becauſe, in obedience to this unavoidable and neceſſary deſire, they ſometimes diſpute with him that prey which he would engroſs for the gratification of his inordinate appetite; for man always ſacrifices more to his intemperance than to his real wants. Born to deſtroy the ſubordinate races of animals, he would exhauſt all Nature, if, by a fecundity ſuperior to his depredations, ſhe did not repair the

perpetual havock he makes. But death is only the minifter of life, and deftruction is the parent of reproduction. However great, therefore, the wafte made by man and the carnivorous animals, the fund or total quantity of life is never diminifhed; for, in proportion to their premature deftruction, frefh births are produced.

Large animals conftitute but a fmall part of life: The earth teems with the fmaller tribes. Every plant, every grain, every particle of organized matter, contains millions of animated atoms. Vegetables feem to be the great fund of fubfiftence; but this fund, however inexhauftible, would hardly be fufficient to the ftill more numerous tribes of infects. Their fecundity, which is equally great, and often quicker than the reproduction of plants, indicates the fuperiority of their numbers: For plants are only renewed every year; but a fingle feafon gives birth to feveral generations of infects, efpecially among the minuter tribes. Their multiplication, therefore, if they were not devoured by other animals, would exceed that of vegetables. But many infects feed upon other infects: Some tribes, as the fpiders, devour indifferently their own as well as many other fpecies; the whole are eaten by the birds; and the wild and domeftic fowls ferve as nourifhment to man, or become the prey of carnivorous animals. Thus violent deaths are equally neceffary as natural ones: They are both modes of deftruction and

of reproduction; the one continues Nature in perpetual youth, and the other preserves the order of her productions, and limits the number of species. Both are effects depending upon general causes: Every individual drops at the end of a determined period; or, if prematurely cut off, it was because he was superfluous. How many flowers are cropped in the spring? What numberless beings are extinguished the moment they begin to exist? How many germs are annihilated before they are unfolded? Man and the carnivorous animals feed upon individuals either completely formed, or about to exist. Flesh, eggs, seeds, and germs of every species, constitute their ordinary nourishment. This waste alone might limit the exuberance of Nature. Let us attend to one of those inferior species that serve for nourishment to others. The herrings, for example, present themselves in myriads to our fishers; and, after feeding all the monsters of the northern ocean, they furnish subsistence to Europe during a certain part of the year. If incredible numbers of them were not devoured by other animals, what would be the effects of such an amazing multiplication? They alone would cover the whole surface of the sea. But, by their numbers, they would soon injure and destroy each other. For want of sufficient nourishment, their fecundity would diminish. Contagion and famine would produce the same effects as the present consumption; the number

of

of theſe animals would by no means increaſe; but the number of thoſe that feed upon them would greatly diminiſh. And, as the ſame remark may be applied to any other ſpecies, they muſt of neceſſity prey upon one another. Hence the killing of animals is both a lawful and an innocent practice, becauſe it is founded in nature, and they hold their exiſtence under that ſeemingly hard condition.

It muſt be allowed, however, that the motives which have raiſed doubts concerning this matter, do honour to humanity. Animals, at leaſt thoſe who are endowed with ſenſes, and are compoſed of fleſh and blood, are ſenſitive beings: Like us, they are capable of pleaſure, and ſubject to pain. To ſacrifice unneceſſarily thoſe animals who approach or live with us, and who, like man, exhibit ſymptoms of pain when injured, indicates a cruel inſenſibility; for thoſe whoſe nature differs greatly from ours, cannot affect us. Natural pity is founded on the analogy which takes place between us and the object that ſuffers, and the degree of it is proportioned to the nearneſs of this conformity or reſemblance in ſtructure. The word *compaſſion* implies a diviſion of ſuffering. In man the ſentiment of pity belongs more to the body than to the mind; and the animals are alſo ſuſceptible of it. They are moved by the voice of pain; they run to ſuccour each other; they recoil at the view of a dead body of their own ſpecies. Thus horror and pity are not ſo

 much

much paſſions of the mind, as natural affections depending on the ſenſibility of the body, and ſimilarity of ſtructure. This emotion, therefore, ought to diminiſh in proportion as different animals recede from each other in their nature and conformation. The beating of a dog, or the killing of a lamb, excite our compaſſion: But we feel no emotion when a tree is felled or an oyſter ſwallowed.

Animals, whoſe organization reſembles that of man, muſt have ſimilar ſenſations; and the livelineſs of theſe ſenſations muſt be proportioned to the activity and perfection of their ſenſes. Thoſe, on the other hand, whoſe ſenſes are blunt, cannot have exquiſite feelings; and thoſe who are deprived of any organ of ſenſe, muſt likewiſe want the correſpondent ſenſations. Motion is a neceſſary effect of the exerciſe of ſentiment. We formerly proved *, that, whatever be the organization of an animal, if it be endowed with ſentiment, it muſt exhibit its feelings by external movements. Thus plants, though properly organized, are inſenſible beings, as well as thoſe animals who have no apparent motion. In the ſame manner, animals, who, like the ſenſitive plant, move their bodies only, but are deprived of progreſſive motion, have very little ſentiment; and even thoſe who are endowed with the power of moving progreſſively, but whoſe actions, like thoſe of the automatons, are

* See above, diſcourſe on the Nature of Animals.

extremely

extremely limited in number, and always performed in the ſame manner, have only a ſmall portion of ſentiment, which is confined to a few objects. In the human ſpecies, there are many automatons: Education, and the mutual communication of ideas, by means of ſocial intercourſe, augment both the quantity and the vivacity of our ſentiments. What a vaſt difference, in this reſpect, between a ſavage and a civilized man, between a female Hottentot and a woman of faſhion? Among the animals, in like manner, thoſe who live in a domeſtic ſtate have their feelings improved by their frequent intercourſe with man; while thoſe who remain wild preſerve only their natural ſenſibility, which is often more certain, but always more confined than that which is acquired by education and example.

Beſides, conſidering ſentiment entirely as a natural faculty, independent of the movements produced by it, we may ſtill aſcertain its different degrees by phyſical relations, to which too little attention has hitherto been given. To poſſeſs a high degree of ſenſibility, the animated body muſt form a whole, not only ſenſible in all its parts, but ſo conſtructed that theſe parts intimately correſpond with each other, in ſuch a manner, that an impreſſion made upon one, muſt neceſſarily be communicated to all the reſt. There muſt alſo be a common centre, upon which the various impreſſions or vibrations muſt terminate, and this centre muſt, like a fulcrum,

re-act

re-act and reflect all these movements. Thus man, and those animals who resemble him most in organization, will be the most sensible beings. Those, on the contrary, who form not so complete a whole, whose parts have a less intimate correspondence, who have several centres of feeling, and who, under the same covering, seem not to include one perfect animal, but various centres of existence separate from each other, are beings of much less sensibility. When a polypus is cut in pieces, each division lives separately; the head of a wasp, after being divided from the body, lives, moves, and even eats as formerly; a lizard, though cut asunder, is neither deprived of motion nor of feeling; the limbs of a lobster are renewed after amputation; the heart of a turtle continues to beat long after it is cut out of the body; the principal viscera of insects, as the heart and lungs, make not a whole in the centre of these animals, but extend along the body, and form a succession of unconnected hearts and wind-pipes: All these, and similar animals, whose organization is so far removed from that of man, have little sentiment.

In man, and in the animals which resemble him, the diaphragm appears to be the centre of sentiment: It is upon this nervous part, which conveys the impressions of pain and of pleasure, that all the movements of the sensible system are exerted. The diaphragm makes a transverse division of the body into two equal parts, the superior

rior of which includes the heart and lungs, and the inferior contains the ſtomach and inteſtines. This membrane is endowed with ſuch an extreme ſenſibility, and is ſo neceſſary to the communication and propagation of feeling, that the ſlighteſt wound, whether in its centre or circumference, is always accompanied with convulſions, and often with death. The brain, therefore, which has been conſidered as the ſeat of ſenſation, is by no means the centre of ſentiment; for it may be wounded, and even parts of it cut away, without deſtroying the animal.

Senſation, therefore, ought to be diſtinguiſhed from ſentiment. Senſation is only a vibration, or impreſſion on the ſenſe; but ſentiment is the ſame ſenſation rendered agreeable or diſagreeable by the propagation of the vibration through the ſyſtem. The eſſential characteriſtic of ſentiment is pleaſure or pain; for all other movements, though they paſs within us, are totally indifferent, and do not affect us. All the external motions, and the exerciſe of every animal force, depend on ſentiment, which only acts in proportion as it is affected. The diaphragm, therefore, which we conſider as the centre of ſentiment, is alſo the centre of force, or common fulcrum upon which every force is exerted.

All lively emotions, whether pleaſant or painful, ſickneſs, fainting, and every ſenſation that has become agreeable or diſagreeable, are felt internally in the region of the diaphragm. In the

the brain, on the contrary, there is no indication of ſentiment. We feel only pure ſenſations in the head. We can, indeed, recal any ſenſation, whether agreeable or diſagreeable; and, if this operation, which is performed in the head, be followed by a real and lively ſentiment, we immediately feel the impreſſion of it in the region of the diaphragm. Thus, in the fœtus, where this membrane is not exerciſed, there is no ſentiment, or at leaſt it is ſo feeble as to produce no effect; for the little motions of a fœtus are mechanical, and have no dependence either on ſenſation or on the will.

Whatever be the nature of that matter, which ſerves as a vehicle to ſentiment, and gives riſe to muſcular motion, we know that it is propagated by the nerves, and that it is inſtantaneouſly communicated from one extremity of the ſyſtem to the other. We know not how this movement is performed, whether by vibrations like thoſe of elaſtic cords, or by a ſubtile fire ſimilar to that of electricity, which reſides not only in animated and inanimated bodies, but is perpetually regenerated by the motion of the heart and lungs, by the friction of the blood in the arteries, and alſo by the action of external cauſes upon the organs of ſenſe. It is certain, however, that the nerves and membranes are the only ſenſible parts of an animal body. The blood, the lymph, the fat, the bones, the fleſh, and all the other ſolids and fluids, are, in themſelves,

ſelves, totally inſenſible. The brain is a ſoft unelaſtic ſubſtance, and, of courſe, incapable of producing or of propagating the vibrations of ſentiment. The meninges, on the contrary, which ſerve as an envelope or covering to all the nerves, are exceedingly ſenſible. Like the nerves, the meninges originate in the head, and, like them, they divide into branches, and extend along with their moſt minute ramifications. They may be regarded as nerves rendered flat; for they are of the ſame ſubſtance, have nearly the ſame degree of elaſticity, and form a neceſſary part of the ſenſible ſyſtem. If the head, therefore, be the ſeat of ſenſation, it muſt reſide in the meninges, and not in the medullary part of the brain, the ſubſtance of which is entirely different.

The opinion, that the brain is the fountain of ſenſation, and the centre of all ſenſibility, aroſe from this circumſtance, that the whole nerves, which are the organs of ſenſation, terminate in the brain; and hence it was regarded as the only part fitted to receive every impreſſion or vibration. This ſuppoſition appeared ſo ſimple and ſo natural, that the phyſical impoſſibility which it implies, though abundantly evident, was never attended to: How can an inſenſible part, a ſoft inactive ſubſtance, ſuch as the brain, be itſelf the inſtrument of all ſenſation and motion? How can this ſoft inſenſible ſubſtance not only receive impreſſions, but retain them for a long time,

time, and propagate vibrations through all the ſolid and ſenſible parts of the body? It may, perhaps, be replied, with Deſcartes and Peyronie, that the principle of ſenſation reſides not in the brain, but in the pineal gland, or in the cortical ſubſtance. But, from examining the parts of the brain, it is apparent, that neither the pineal gland nor cortical ſubſtance contain nerves: They are ſurrounded with the inſenſible part of the brain, and ſo ſeparated from the nerves, that they can receive none of their movements. Hence theſe ſuppoſitions, as well as the former, fall to the ground.

But what is the uſe, what are the functions of this noble and principal part of the body? Is not the brain found in every animal? Is it not larger in man, in the quadrupeds, and in the birds, who have all a great deal of ſentiment, than in fiſhes, inſects, and other animals which have little ſentiment? When compreſſed, is not all motion ſuſpended? If this part is not the principle of action, why is it ſo eſſentially neceſſary? Why is it even proportioned, in every ſpecies of animals, to the quantity of ſentiment they poſſeſs?

Theſe queſtions, however difficult they may appear, admit of eaſy ſolutions. Upon an attentive and unprejudiced examination, the brain, as well as the medulla oblongata, and ſpinal marrow, which is a prolongation of the brain, are only a ſpecies of mucilage, and hardly organized.

nized. We difcover in it, indeed, the extremities of fmall arteries, which terminate there in vaft numbers, and carry no blood, but a white nutritious lymph only. Thefe minute arteries, or lymphatic veffels, when feparated from the brain by maceration, appear like very fine threads. The nerves, on the contrary, never penetrate the fubftance of the brain, but terminate on its furface; but they firft lofe their folidity and elafticity; and their extremities next the brain are foft, and almoft mucilaginous. Hence the brain, which is nourifhed by the lymphatic arteries, furnifhes, in its turn, nutriment to the nerves, which ought to be confidered as a fpecies of vegetation iffuing from the brain in trunks and branches, which afterwards divide into an infinite number of ramifications. The brain is to the nerves, what the foil is to plants: The extremities of the nerves are the roots, which, in every vegetable, are more tender and foft than the trunk or branches. They contain a ductile matter proper for the growth and nourifhment of the nervous tree. This ductile matter they derive from the fubftance of the brain itfelf, to which the arteries perpetually carry the neceffary fupplies of lymph. The brain, therefore, inftead of being the origin of fenfation, or the principle of fentiment, is only an organ of fecretion and nutrition, but a very effential organ; for, without it, the nerves would neither grow nor be fupported.

The

The brain is largeſt in man, quadrupeds, and birds; becauſe the quantity of nerves is greater than in the fiſhes and inſects, whoſe ſentiment, for this reaſon, is feeble: The latter have a ſmall brain, proportioned to the ſmall quantity of nerves it has to nouriſh. On this occaſion, I muſt remark, that man's brain, as has been alledged, is not proportionally larger than that of any other animal: There are ſpecies of monkeys and of the cetaceous tribes which have larger brains, in proportion to the ſize of their bodies, than man: And this fact likewiſe proves, that the brain is neither the ſeat of ſenſation, nor the principle of ſentiment; for, if this were the caſe, theſe animals would have finer ſenſations and more ſentiment than the human ſpecies.

Plants abſorb not the ſolid parts of earth or water: Theſe parts muſt be reduced by heat into thin vapours, before they can be abſorbed by the roots. In the ſame manner, the nerves are nouriſhed by the ſubtile moiſture of the brain, which is abſorbed by their extremities or roots, and from thence conveyed to all the branches of the ſenſitive ſyſtem. This ſyſtem, as formerly remarked, forms a whole, all the parts of which have ſuch an intimate connection, that none of them can be injured without wounding the reſt. The ſlighteſt irritation of a ſmall nerve, is ſufficient to convulſe the whole body; and the pain and conſequent convulſions cannot be cured but by cutting the nerve

above

above the injured part; and then all the parts upon which this nerve was diſtributed, become for ever immoveable and inſenſible. The brain ought not to be regarded as an organic portion of the nervous ſyſtem; becauſe it has not the ſame properties, nor conſiſts of the ſame ſubſtance, being neither ſolid, nor elaſtic, nor ſenſible. I acknowledge, that, when compreſſed, ſenſation ceaſes. But this alone proves it to be a body foreign to the nervous ſyſtem, which, acting by its gravity on the extremities of the nerves, preſſes and benumbs them, in the ſame manner as a weight applied to the arm, leg, or any other part of the body, benumbs the nerves, and annihilates their ſenſation. It is true, this ceſſation of feeling, by compreſſion, is only a ſuſpenſion or a benumbing, which vaniſhes the moment the compreſſion is removed, and ſenſation and motion are again renewed. I farther acknowledge, that, by tearing the medullary ſubſtance of the brain, convulſions, privation of feeling, and death itſelf, will enſue. But theſe effects are produced, becauſe the nerves are entirely deranged, and the whole of them materially injured in their very ſource.

To theſe arguments particular facts might be added, which would equally ſhow that the brain is neither the centre of ſentiment, nor the ſeat of ſenſation. We have ſeen animals, and even children, born without head or brain, and yet they had ſentiment, motion, and life. There

are whole claſſes of animals, as inſects and worms, in whom the brain is not perceptible, having only a part correſponding to the medulla oblongata and ſpinal marrow. It is, therefore, more rational to place the ſeat of ſenſation in the ſpinal marrow, which no animal wants, than in the brain, which is not an univerſal part, common to all ſenſitive beings.

The great obſtacle to the advancement of human knowledge, lies not in the objects themſelves, but in our manner of conſidering them. Man's body, however complicated, is more ſimple than his ideas. It is leſs difficult to ſee Nature as ſhe is, than to know her in the dreſs ſhe is exhibited to us. She only wears a veil; but we give her a maſk. We conceal her with prejudices. We ſuppoſe that ſhe operates as we act and think. Her actions, however, are evident; but our thoughts are obſcure. To her operations we tranſfer the abſtractions of our own minds. We judge of her deſigns by our own views; and we perpetually blend her works which are uniform, her facts which are always certain, with the fluctuating illuſions of our own imagination.

I ſpeak not here of ſyſtems purely arbitrary, or of frivolous and imaginary hypotheſes, but of the methods generally employed in the inveſtigation of Nature. Even the method of experiment has produced more errors than truths. This method, though the moſt certain, requires great dexterity of management: A ſmall deviation either leads

to barren regions, or to rare and obſcure objects. We nevertheleſs aſſemble them together, and aſcribe to them general relations and common properties; and, as mankind paſs and repaſs on the crooked paths which have been formed, the road appears to be clear and beaten. Though it terminates in nothing, the whole world follows, the method is adopted, and the conſequences derived from it are received as fixed principles. I might demonſtrate this doctrine by expoſing the origin of what are called *principles* in all the ſciences, both abſtract and real: In the former, the general baſis of the principle is abſtraction, or one or two ſuppoſitions: In the latter, the principles are only conſequences, good or bad, of the methods which have been obſerved. I ſhall here limit myſelf to the ſcience of anatomy: Did not the firſt man who, contrary to a repugnance of Nature, opened a human body, believe that, by diſſecting and examining its different parts, he would ſoon diſcover its ſtructure, mechaniſm, and functions? But having found the ſubject to be infinitely more complicated than he imagined, he was ſoon obliged to renounce his pretenſions, and to inſtitute a method, not for diſtinguiſhing and judging, but ſolely in order that he might ſee the parts in a certain train or order. Many ages were neceſſary to bring this method to any degree of perfection; and it alone ſtill occupies the attention of our moſt accompliſhed anatomiſts. This

method, however, is not the ſcience, but only the road which ought to lead to it, and which perhaps might have led to it, if, inſtead of travelling always in the ſame narrow path, anatomiſts had extended the tract, and compared the human body with that of the other animals. What real knowledge can be derived from a ſingle object? Is not every ſcience founded on the compariſon of ſimilar and different objects, of their analogous or oppoſite properties, and of all their relative qualities? Abſolute knowledge, if it has an exiſtence, exceeds the powers of man: We can judge only by the relations of things. When ſolely occupied with the method of inveſtigating a ſubject, and when we conſider it independent of what is analogous, or different from it, we can never arrive at real knowledge, and far leſs riſe to any general principle: In this caſe, we can invent names only, and make deſcriptions of the object, and of all its parts. Thus, though human bodies have been diſſected for three thouſand years, anatomy is ſtill nothing but a nomenclature; and hardly any advances have been made toward the real object, which is the knowledge of the animal œconomy. Beſides, the method itſelf is ſtill imperfect, though it ought to be clear and ſimple, ſince it depends on inſpection, and has no end but that of denominations. As this nominal knowledge has been miſtaken for ſcience, anatomiſts, inſtead of limiting the number of objects,

jects, have been anxious to augment the number of names. They have loaded the fubject with minute and fruitlefs details. They were inclined to difcover differences, where every thing was alike. In creating new names, they imagined they were exhibiting new objects; and the defcription of a minute part, which had been either overlooked or neglected by former anatomifts, was dignified with the appellation of a *difcovery*. Even the names themfelves being frequently fubftituted in place of the objects, with which they have no relation, have only ferved to augment the confufion. Are not the *nates* and *teftes* fmall parts of the brain fimilar to the whole, and unworthy to be diftinguifhed by particular denominations? Thefe names, beftowed originally from caprice, at laft gave rife to new opinions and prejudices. Others, given to parts which either did not exift, or were imperfectly viewed, have been the fources of frefh errors. How many functions and ufes have been afcribed to the pineal gland, and that pretended void in the brain, called the *fornix*, while the former is only a fimple gland, and the exiftence of the latter is doubtful, being probably produced by the hand of the diffector*?

The moft difficult part of fcience, therefore, is not to know thofe things which form the direct object of it, but to ftrip them of a thoufand falfe colours under which they have been conceal-

* See Steno.

ed, to examine the foundation and effects of the method employed by former inquirers, to reject every arbitrary arrangement, and, in fine, to endeavour to detect every error or prejudice that has been adopted. All these precautions are necessary to uncover Nature; but, to know her, we have only to compare her with herself. In the animal œconomy, her appearance is very mysterious, not only because the subject is complex, but because, having neglected those modes of comparison which alone could afford light, we have been left to wander in the darkness of vague hypotheses. The human body has been described in millions of volumes; while the anatomy of the other animals has been almost entirely neglected. In the human subject, we have distinguished, named, and described the most minute parts; while we are ignorant whether these, or even parts of greater magnitude and importance, exist in other animals. Particular functions have been ascribed to particular organs, without knowing whether the same functions are not performed in other beings, though deprived of these organs. So that, in the different explications of the animal œconomy, we labour under the double disadvantage of having commenced with the most complicated subject, and of reasoning concerning this subject without the aid of analogy.

In the course of this work, we have observed a very different method. Uniformly comparing Nature with herself, we have traced her in her relations,

relations, in her differences, and in her extremes. To mention here only thofe parts relative to the animal œconomy, of which we have had occafion to treat, as the generation, the fenfes, the movements, the fentiment, and the nature of animals, the reader will eafily perceive, that, after all the labour beftowed in difcarding falfe ideas, in rooting out eftablifhed prejudices, and in feparating truth from arbitrary conceits, the only art we have employed is that of comparifon. If we have fucceeded in throwing light upon thefe fubjects, it muft be afcribed not fo much to ingenuity or labour, as to the method we have followed, and which we have endeavoured to render as general as our knowledge would permit. Before giving general ideas, we have invariably exhibited the particular refults, or effects.

We fhall now content ourfelves with relating a few facts, which will be fufficient to prove that man, in the ftate of nature, was never deftined to live upon herbs, grain, or fruits; but that, in every period of his exiftence, he, as well as moft other animals, eagerly defired to nourifh himfelf with flefh.

The Pythagorean diet, though extolled by ancient and modern philofophers, and even recommended by certain phyficians, was never indicated by Nature. In the golden age, man was innocent as the dove; his food was acorns, and his beverage pure water from the fountain;

Finding every where abundant ſubſiſtence, he felt no anxieties, but lived independent, and always in peace both with himſelf and the other animals. But he no ſooner forgot his native dignity, and ſacrificed his liberty to the bonds of ſociety, than war and the iron age ſucceeded that of gold and of peace. Cruelty, and an inſatiable appetite for fleſh and blood, were the firſt fruits of a depraved nature, the corruption of which was completed by the invention of manners and of arts.

Theſe are the reproaches which, in all periods, have been thrown upon man, in a ſtate of ſociety, by certain auſtere and ſavage philoſophers: Flattering their private pride by the humiliation of the whole ſpecies, they have exhibited this unnatural picture, which has no value but in the contraſt: To hold out to man chimerical ideas of happineſs, may, perhaps, be ſometimes uſeful.

Did this ſtate of ideal innocence, of exalted temperance, of entire abſtinence from fleſh, of perfect tranquillity, of profound peace, ever exiſt? Is it not a fable, where man has been employed as an animal, to give us leſſons of moral inſtruction? Is it even poſſible to conceive the exiſtence of virtue previous to ſociety? Does the loſs of this ſavage ſtate merit regret? Was man, while a wild, unſocial animal, more dignified than the poliſhed citizen? Yes; for every evil ſprings from ſociety; and what does it import

whether there was virtue in a ſtate of nature, if it gave riſe to happineſs, if man were only leſs miſerable than in his preſent condition? Liberty, health, ſtrength, are not theſe preferable to effeminacy, ſenſuality, and voluptuouſneſs, accompanied with ſlavery? The abſence of pain is more eſtimable than a thouſand pleaſures: What is happineſs, but to have nothing to deſire?

If this repreſentation were juſt, they ſhould go farther, and tell us, that it is better to vegetate than to live, to have no deſires than to gratify our appetites, to doze perpetually in apathetic ſlumbers, than to open our eyes to view the beauties of Nature; and, in a word, to ſink below the condition of brutes, or to become maſſes of inanimate matter attached to the earth, than to be active and ſentient beings, capable of receiving pleaſure from a thouſand ſources.

But, inſtead of diſputing, let us attend to facts: We ſee not the ideal, but the real ſtate of nature. Is the ſavage inhabitant of the deſert a tranquil being? Is he a happy man? For we muſt not ſuppoſe with a certain philoſopher, one of the moſt ferocious cenſors of humanity *, that the diſtance from man, in a pure ſtate of nature, to the ſavage, is greater than from the ſavage to us; that the ages elapſed before the invention of words, have been longer than thoſe which were neceſſary for the perfecting of ſigns and of language. I have always thought, that, in reaſon-

* Rouſſeau.

ing

ing concerning facts, all suppositions ought to be banished till every thing presented by Nature be candidly examined. Now, we find that mankind descend, by imperceptible degrees, from the most enlightened and polished nations, to people of less genius and industry; from the latter, to others more gross, but still subject to Kings and to laws; from these, again, to savages, who exhibit as many different shades as the polished nations. Some savages form numerous nations subject to chiefs; smaller societies of them are governed by customs; and the most solitary and independent species constitute families, and submit to their fathers. Thus an empire and a monarch, a family and a father, are the two extremes of society. These extremes are likewise the boundaries of Nature: If they extended farther, in traversing the numberless solitudes of the globe, we must have discovered those human animals, who, like the monkeys, are deprived of speech, the males separated from the females, their offspring abandoned to the elements, &c. Even supposing the constitution of the human body to be very different from what we see it, and that its growth were more rapid, it is impossible to maintain that man ever existed without forming families; because, if not cherished and attended for several years, the whole children must have inevitably perished. Whereas, other animals require the care of the mother a few months only. This physical necessity is a perfect

demonſtration, that the human ſpecies could neither multiply nor exiſt independent of ſociety; and that the attachment of parents to children is natural. This attachment muſt unite the parents and children into a ſmall ſociety, which alone would be ſufficient to accuſtom them to make certain geſtures, to utter certain ſounds, and inure them to every expreſſion of ſentiment and of deſire. All this is atteſted by facts; for the moſt ſolitary ſavages have, like other men, the uſe of ſigns and of words.

Thus the ſtate of pure nature is a known ſtate: It is that of the ſavage living in the deſert, but living in family, knowing his children, and being known by them, uſing words, and making himſelf underſtood. The ſavage girl picked up in the woods of Champagne, and the man found in the foreſts of Hanover, are not exceptions to this doctrine. They had lived in abſolute ſolitude; and could not, therefore, have any idea of ſociety, or of the uſe of words: But if they had ever met, the propenſity of Nature would have conſtrained, and pleaſure united them. Attached to each other, they would ſoon have made themſelves underſtood; they would have firſt learned the language of love, and then that of tenderneſs for their offspring. Beſides, theſe ſavages muſt have ſprung from men in ſociety, and been left in the woods at the age of four or five years; for, before this period, they could not have exiſted. They muſt have been old

enough

enough to be able to procure ſubſiſtence, but not to retain the ideas which had been communicated to them.

Let us, then, examine this man of Nature, this ſavage living in the family ſtate. If the family proſpers, he will ſoon become the chief of a numerous ſociety, of which all the members will have the ſame manners, obſerve the ſame cuſtoms, and ſpeak the ſame language. At the third or fourth generation, new families will ariſe, who may live ſeparately; but, being united by the common bonds of cuſtoms and language, they will form a ſmall nation, which, increaſing with time, may, according to circumſtances, either become one people, or remain in a ſtate ſimilar to that of thoſe ſavage nations with which we are acquainted. If theſe new men live under a mild climate, and upon a fertile ſoil, they may occupy, in the full poſſeſſion of liberty, a conſiderable ſpace, beyond which, if they meet with nothing but deſerts, or men equally new with themſelves, they will remain ſavage, and become, according to circumſtances, either friends or enemies, to their neighbours. But, when under a ſevere climate, or ungrateful ſoil, they find themſelves pinched by numbers, or cramped for want of room, they will make irruptions, form colonies, and blend themſelves with other nations, of which they will either become the conquerors or the ſlaves. Thus man, in every ſituation, and under every climate, tends

equally

equally toward ſociety. It is the uniform effect of a neceſſary cauſe; for, without this natural tendency, the propagation of the ſpecies, and, of courſe, the exiſtence of mankind, would ſoon ceaſe.

Having diſcuſſed the origin of ſociety, and ſhewn that it is founded on Nature, let us next inquire what are the appetites and taſte of ſavages. In this inveſtigation, we ſhall find, that none of them live ſolely on fruits, herbs, or grain; that they all prefer fleſh and fiſh to other aliments; that pure water is not pleaſant to them; and that they endeavour either to make for themſelves, or to procure from others, a leſs inſipid beverage. The ſavages of the South drink the water of the date-tree; thoſe of the North ſwallow large draughts of whale oil; others make fermented liquors; and the whole, without exception, diſcover a violent paſſion for ardent ſpirits. Their induſtry, dictated by neceſſity, and excited by their natural appetites, is confined to the making of inſtruments for hunting and fiſhing. A bow and arrows, a club, a net, and a canoe, conſtitute the whole of their arts, and are all deſtined to procure a ſpecies of food correſponding to their taſte: And, what correſponds with their taſte, muſt be agreeable to Nature; for, as formerly remarked*, man would die of inanition, if he took not more ſubſtantial food than herbs alone. Having but one

* See above, vol. iii. article Ox.

ſtomach,

ſtomach and ſhort inteſtines, he could not take a ſufficient quantity of ſuch meager food as would afford him proper nouriſhment. The ſame remark is applicable to fruits and grain; for, though corns and other grains have been highly improved by culture, and contain a greater quantity of organic nutritive particles, than any of thoſe which are produced ſpontaneouſly by Nature; yet, if man were denied any other food, he would only drag out a feeble and languiſhing exiſtence.

View thoſe ſolitary enthuſiaſts, who abſtain from every thing that has had life, who, from motives of ſanctity, renounce the gifts of the Creator, fly from ſociety, and ſhut themſelves up within ſacred walls, againſt which Nature continually revolts: Confined in thoſe living tombs, where they contemplate nothing but death, their mortified viſages and hollow eyes indicate perpetual efforts to ſupport a languiſhing, feeble, and uſeleſs exiſtence. They take food; but their hunger never abates. Though aided by the fervour of a romantic imagination, they are enabled to reſiſt the effects of this cruel abſtinence for a few years only, and may be ſaid rather to die daily than to live.

If man were obliged to abſtain totally from fleſh, he could not, at leaſt in our climates, either exiſt or multiply. This diet may, perhaps, be ſufferable in ſouthern countries, where the fruits are better concocted, and the plants, roots, and

grains

grains more nourifhing. The Brahmans, however, rather form a fect than a people; and their religion, though very ancient, has never extended beyond their own climate.

This religion, founded on metaphyfics, is a ftriking example of the lot of human opinions. By collecting the fcattered fragments which remain, it is unqueftionable that the fciences have been very anciently cultivated, and perhaps ripened to a degree of perfection beyond what they now are. It has been known long before the prefent æra, that all animated beings contained indeftructible living particles, which paffed from one body to another. This truth, adopted at firft by philofophers, and afterwards more generally diffufed, would preferve its purity during the enlightened ages only. A revolution of dark periods having fucceeded, no more of the living organic particles were remembered than what was fufficient to give rife to the notion, that the living principle of animals conftituted an indeftructible whole, which feparated from the body after death. To this ideal whole they gave the name of *Soul*, which they foon regarded as a being really exifting in all animals; and combining with this chimerical being, the real, but disfigured, idea of the paffage of living particles, they maintained, that, after death, this foul tranfmigrated fucceffively and perpetually from one body to another. From this fyftem man was not excepted: They quickly affociated

morality with metaphyſics: They heſitated not to hold that this ſurviving being retained, in all its tranſmigrations, its former ſentiments, affections, and deſires. Weak minds trembled. They contemplated with horror the paſſage of the ſoul from an agreeable lodging to be an inhabitant of an unclean and loathſome animal. Every new fear engenders a freſh ſuperſtition. In killing an animal, they were terrified leſt they ſhould murder their miſtreſs or their father. They regarded every brute as their neighbour: And, at laſt, both from motives of tenderneſs and of duty, they maintained that they ought to abſtain from every thing endowed with life. This is the origin and progreſs of the moſt ancient religion of India: An origin which ſhows, that truth, when committed to the multitude, is ſoon disfigured; that a philoſophical opinion never becomes popular till it has changed its form; but that, by means of this preparation, it may prove the baſis of a religion, the ſtability of which will be proportioned to the univerſality of the prejudice, and, being founded on truths miſunderſtood, it muſt be environed with obſcurity, and, of courſe, it will have an air of myſtery, of grandeur, and of incomprehenſibility: In fine, that fear, combining with reverence, will make this religion degenerate into ſuperſtitious and ridiculous practices, which, however, will take root, and produce rites that at firſt will be ſcrupulouſly obſerved, but will ſo

gradually

gradually alter with time, that even the opinion which gave them birth, can only be traced in falſe traditions, in proverbs, and in tales puerile and abſurd. From hence we may conclude, that every religion founded on human opinions is falſe and variable; and that, to promulgate the true religion, which depends not on the fancies of men, and which is conſtant, unalterable, and will always be the ſame, is the prerogative of God alone.

But, to return to our ſubject. An entire abſtinence from fleſh can have no effect but to enfeeble nature. Man, to preſerve himſelf in proper plight, requires not only the uſe of this ſolid nouriſhment, but even to vary it. To obtain complete vigour, he muſt chooſe that ſpecies of food which is moſt agreeable to his conſtitution; and, as he cannot preſerve himſelf in a ſtate of activity but by procuring new ſenſations, he muſt give his ſenſes their full ſtretch, and eat a variety of meats, to prevent the diſguſt ariſing from an uniformity of nouriſhment. But he muſt avoid every exceſs, which is ſtill more noxious than abſtinence.

Thoſe animals which have but one ſtomach, and ſhort inteſtines, are obliged, like man, to feed upon fleſh. It is an unqueſtionable fact, that all animals which have more ſtomachs than one, and long inteſtines, like the cow, ſheep, goat, &c. are herbivorous, and that thoſe which have but one ſtomach, and ſhort inteſtines, like man, dogs, wolves, lions, &c. are carnivorous.

 It

It muſt not, however, be concluded, that herbivorous animals are under a phyſical neceſſity of feeding on herbs alone, though the carnivorous tribes can by no means ſubſiſt without fleſh. We maintain only, that the former can be ſufficiently nouriſhed without the uſe of fleſh; not that they would not have recourſe to this food, if Nature had endowed them with talents adapted to the purpoſes of ſeizing prey; for we have ſeen ſheep, calves, goats, and horſes, eat, with avidity, milk, eggs, and even fleſh, when cut down and ſeaſoned with ſalt, though they had not been previouſly accuſtomed to ſuch food. We may, therefore, maintain, that the taſte for fleſh is an appetite common to all animals, and that it is exerted with more or leſs vehemence or moderation according to their particular conformation; for this appetite is apparent not only in man and the quadrupeds, but in birds, fiſhes, inſects, and worms; to the laſt of which, it would appear, all fleſh has been ultimately deſtined by Nature.

Nutrition, in every animal, is performed by organic particles, which, after being ſeparated from the groſs maſs of aliment, by means of digeſtion, mingle with the blood, and are aſſimilated to all the parts of the body: But, independent of this principal effect, which is always proportioned to the quality of food, another effect is produced, which depends on the quantity or bulk of the nouriſhing ſubſtances.

The ſtomach and inteſtines conſiſt of flexible membranes, which occupy a conſiderable ſpace within the body. Theſe membranes, to preſerve them in a proper ſtate of tenſion, and to counterbalance the action of the neighbouring organs, require to be always partly filled. If, for want of nouriſhment, this large ſpace be left entirely void, the membranes, having no internal ſupport, collapſe, and adhere to each other, which gives riſe to weakneſs, and all the ſymptoms of extreme want. Thus the aliments, beſide anſwering the purpoſes of nutrition, ſerve as a ballaſt to the body. Both their preſence and their volume are neceſſary to maintain the equilibrium between the internal parts, which act and react againſt each other. When a man dies of hunger, it is not ſo much for want of nouriſhment, as of a proper poiſe to the body. Thus animals, and eſpecially the moſt voracious tribes, when preſſed with hunger, are ſo eager to fill the internal void, that they ſwallow earth and ſtones. Clay has been found in the ſtomach of a wolf; and I have ſeen ſwine eat it greedily. Moſt birds ſwallow pebbles, &c. This is not the effect of taſte, but of neceſſity; for the moſt craving want is, not to refreſh the blood with new chyle, but to maintain an equilibrium in the action of the great parts of the animal machine.

THE WOLF*.

THE wolf is one of thoſe animals whoſe carnivorous appetite is exceſſively ſtrong. Though he has recived from Nature the means of gratifying this taſte, though ſhe has beſtowed on him arms, craftineſs, ſtrength, agility, and every thing neceſſary for diſcovering, ſeizing, conquering, and devouring his prey; yet he often dies of hunger; becauſe men have declared war againſt him, put a price on his head, and forced him to fly to the foreſts, where he finds only a few ſpecies of wild animals, who eſcape from him by the ſwiftneſs of their courſe, and whom he cannot ſurpriſe but by chance, or by a patient,

* The wolf is ranked in the ſame genus with the dog by Linnæus, and by Mr. Pennant; the latter of whom deſcribes him in the following manner: 'WOLF—Dog with a long 'head, pointed noſe, ears erect and ſharp, tail long, buſhy, 'and bending down; teeth large; colour generally pale brown, 'tinged with yellow; ſometimes found white, and ſometimes 'black; taller than a large grey-hound.'

In Greek, λυκος; in Latin, *Lupus*; in Italian, *Lupo*; in Spaniſh, *Lobo*; in German, *Wolff*; in Swediſh, *Ulf*; in Poliſh, *Wilk*; in French, *Le Loup*.

Lupus; *Geſner. Icon. Animal. Quad. p.* 79.

Lupus; *Ray, Synopſ. Animal. Quad. p.* 173.

Canis, cauda incurvata; *Linn. Syſt.* 58.

Canis ex griſco flaveſcens; *Briſſon. Quad. p.* 235.

Lupus vulgaris; *Klein. Hiſt. Nat. Quad. p.* 70.

and

and often fruitleſs attendance at thoſe places to which they generally reſort. He is naturally clowniſh and daſtardly; but want makes him ingenious, and neceſſity gives him courage. When preſſed with famine, he braves danger; he attacks thoſe animals which are under the protection of man, eſpecially ſuch as he can tranſport with eaſe, as lambs, ſmall dogs, and kids; and, when ſucceſsful in his bloody expeditions, he returns often to the charge, till, being wounded, chaſed, and maletreated by men and dogs, he retires, during the day, to his den; but iſſues forth in the night, traverſes the country, roams about the cottages, kills all the animals which have been left without, digs the earth under the doors, enters with a dreadful ferocity, and puts every living creature to death, before he chooſes to depart, and carry off his prey. When theſe inroads happen to be fruitleſs, he returns to the woods, ſearches about with avidity, follows the tract of wild beaſts, and purſues them in the hope that they may be ſtopped and ſeized by ſome other wolf, and that he may be a partaker of the ſpoil. In fine, when his hunger is extreme, he loſes the idea of fear; he attacks women and children, and even ſometimes darts upon men, till, becoming perfectly furious by exceſſive exertions, he generally falls a ſacrifice to pure rage and diſtraction.

The wolf, both externally and internally, has ſo ſtrong a reſemblance to the dog, that he ſeems

to have been formed upon the ſame model. But he exhibits the ſame characters under a maſk. The figure is ſimilar; but the reſult is directly reverſed. Their natural diſpoſitions are ſo oppoſite, that they are not only incompatible, but repugnant by Nature, and inimical by inſtinct. A young dog trembles at the firſt glance of a wolf. The odour of the wolf, though new and unknown, excites ſuch an averſion in the dog, that he flies, and comes quivering to the feet of his maſter. A maſtiff, who knows his own ſtrength, though terrified at the appearance of a wolf, attacks him with courage, endeavours to put him to flight, and exerts every effort to get rid of an odious object. They never meet, but either flight or death is the conſequence. When the wolf is ſtrongeſt, he mangles and devours his prey. The dog, with more generoſity, contents himſelf with victory; he finds no ſavory odour in the body of a dead enemy, but abandons him to be food for the ravens, and even to other wolves; for wolves eat the carcaſſes of each other, and, when one is much wounded, the others follow the blood, and aſſemble in troops to diſpatch him.

The dog, even when wild, is not a fierce animal. He is eaſily tamed, and attaches himſelf with fidelity to his maſter. The young wolf may alſo be tamed; but he feels no attachments; Nature in him is too powerful for education: With age he reſumes his ferocious character, and

returns,

returns, with the firſt opportunity, to his ſavage ſtate. Dogs, even thoſe of the moſt clowniſh race, love to aſſociate with other animals, and are naturally diſpoſed to accompany them: It is by inſtinct alone, and not by education, that they know how to conduct and guard the flocks. The wolf, on the contrary, is an enemy to all ſociety, and keeps no company even with thoſe of his own ſpecies. When ſeveral wolves appear together, it is not a ſociety of peace, but of war; it is attended with tumult and dreadful prowlings, and indicates an attack upon ſome large animal, as a ſtag, an ox, or a formidable maſtiff. This military expedition is no ſooner finiſhed, than they ſeparate, and each returns in ſilence to his ſolitude. There is even little intercourſe between the males and females: They feel the mutual attractions of love but once a year, and never remain long together. The females come in ſeaſon in winter: Many males follow the ſame female; and this aſſociation is more bloody than the former; for they growl, chafe, fight, and tear one another, and often ſacrifice him that is preferred by the female. The female commonly flies a long time, fatigues her admirers, and retires, while they ſleep, with the moſt alert or moſt favourite male.

The ſeaſon of love continues only twelve or fifteen days; it commences with the oldeſt females; the young ones are not ſo early diſpoſed. The males have no marked period, but are

equally ready at all times. They go from female to female, according as they are in a condition to receive the male: They begin with the old females about the end of December, and finiſh with the young ones in the month of February or beginning of March. The time of geſtation is about three months and a half*; and young whelps are found from the end of April to the month of July. This difference in the time of geſtation between the ſhe-wolf, who carries 100 days, and the bitch, who carries only 60 days, proves that the wolf and dog differ as much in their conſtitutions, and particularly in one of the chief functions of the animal œconomy, as they do in their tempers. Thus, the wolf and dog have never been regarded as the ſame animal but by the nomenclators of natural hiſtory, who being acquainted with the ſurface of Nature only, never extend their views beyond their own methods, which are always deceitful, and often erroneous, even in the moſt obvious facts. The dog and wolf cannot copulate, or produce an intermediate race †. Their diſpoſitions are oppoſite, and their conſtitutions different. The wolf lives much longer than the dog; the former brings forth but once a year, and the latter twice or thrice. Theſe diſtinctions are more than ſufficient to demonſtrate the two animals to be of very different kinds. Beſides, upon a

* See Nouveau Traité de Venerie, p. 75.
† See article Dog.

closer

closer examination, we easily perceive, that, even externally, the wolf differs from the dog by essential and uniform characters. The appearance of the head and form of the bones are by no means the same. The cavity of the eye in the wolf is placed obliquely; the orbits are inclined; the eyes sparkle, and shine in the dark; instead of barking, he howls; his movements, though quick and precipitate, are more equal and uniform; his body is stronger, but not so flexible*; his members are firmer, his jaws and teeth larger, and his hair coarser and thicker.

But these animals have a great resemblance in their internal structure. The wolves copulate like the dogs, and have an osseous penis, surrounded with a ring, which swells and hinders them from separating. When the females are about to bring forth, they search for a concealed place in the inmost recesses of the forest. After fixing on the spot, they make it smooth and plain for a considerable space, by cutting and tearing up with their teeth all the brambles and brush-wood. They then bring great quantities of moss, and prepare a commodious bed for their young, which are generally five or six, though sometimes they bring forth seven, eight, and even nine, but never less than three. They come into the world blind, like the dogs; the mother

* Aristotle tells us, that the neck of the wolf consists of one continued bone. But this is a mistake; for the wolf's neck is composed of vertebræ, and is equally flexible as that of a dog.

suckles

ſuckles them ſome weeks, and ſoon learns them to eat fleſh, which ſhe prepares for them by tearing it into ſmall pieces. Some time after, ſhe brings them field-mice, young hares, partridges, and living fowls. The young wolves begin by playing with theſe animals, and at laſt worry them; then the mother pulls off the feathers, tears them in pieces, and gives a part to each of her young. They never leave their den till the end of ſix weeks or two months. They then follow their mother, who leads them to drink in the hollow trunk of a tree, or in ſome neighbouring pool. She conducts them back to the den, or, when any danger is apprehended, obliges them to conceal themſelves elſewhere. Though, like other females, the ſhe-wolf is naturally more timid than the male; yet, when her young are attacked, ſhe defends them with intrepidity; ſhe loſes all ſenſe of danger, and becomes perfectly furious. She never leaves them till their education is finiſhed, till they are ſo ſtrong as to need no aſſiſtance or protection, and have acquired talents fit for rapine, which generally happens ten or twelve months after their firſt teeth, which commonly fall out in the ſixth month *, are replaced.

Both males and females are capable of generating at the age of two years. The females, it is probable, like thoſe of other ſpecies, are ſooner mature for this operation than the males. It is

* See la Venerie de du Fouilloux, p. 100.

certain,

certain, however, that they never come in ſeaſon before the ſecond winter after birth, which implies 18 or 20 months. A ſhe-wolf, which I brought up, diſcovered no marks of love till the third winter, or more than two years and a half. We are aſſured by hunters *, that, in every litter, there are more males than females; which confirms the general remark, that, in every ſpecies, the number of males exceeds that of the females. They likewiſe tell us, that ſome males attach themſelves to the females, after the ſeaſon of love is over, and accompany them till they are about to bring forth; that then the female ſteals off, and anxiouſly conceals her young, leſt the father ſhould devour them immediately after birth; but that, when brought forth, he takes an affection for them, ſupplies them with food, and, if deprived of their mother, provides for and protects them himſelf. Theſe facts, however, have the air of fiction, and ſeem contrary to the natural diſpoſitions of the wolf.

Wolves acquire their full growth at the end of two or three years, and live 15 or 20 years. This fact accords with what we have already remarked concerning many other ſpecies, that the time of growth is the ſeventh part of the total duration of life. When old, wolves turn whitiſh, and their teeth are much worn. When full, or fatigued, they ſleep, but more during the day than the night, and it is always a kind of

* See le Nouveau Traité de la Venerie, p. 276.

ſlight

ſlight ſlumber. They drink often; and, in the time of drought, when there is no water in the hollows, or in the trunks of old trees, they repair, ſeveral times in a day, to the brooks or rivulets. Though extremely voracious, if ſupplied with water, they can paſs four or five days without meat.

The wolf has great ſtrength, eſpecially in the anterior parts of the body, in the muſcles of the neck and jaws. He carries a ſheep in his mouth, and, at the ſame time, outruns the ſhepherds; ſo that he can only be ſtopped or deprived of his prey by dogs. His bite is cruel, and always more obſtinate in proportion to the ſmallneſs of the reſiſtance; for, when an animal can defend itſelf, he is cautious and circumſpect. He never fights but from neceſſity, and not from motives of courage. When wounded with a ball, he cries; and yet, when diſpatching him with bludgeons, he complains not. He is harder, leſs ſenſible, and more robuſt than the dog. He runs and roams about whole days and nights; and, of all animals, he is perhaps the moſt difficult to conquer in the chaſe. The dog is gentle and courageous; the wolf, though ferocious, is timid. When he falls into a ſnare, he is ſo overcome with terror, that he may be either killed or taken alive, without reſiſtance. He allows himſelf to be chained, muzzled, and led where you pleaſe, without exhibiting the leaſt ſymptom of reſentment or diſcontent. The ſenſes of the

wolf are excellent, but particularly his ſenſe of ſmelling, which often extends farther than his eye. The odour of carrion ſtrikes him at the diſtance of more than a league. He likewiſe ſcents live animals very far, and hunts them a long time by following their tract. When he iſſues from the wood, he never loſes the wind. He ſtops upon the borders of the foreſt, ſmells on all ſides, and receives the emanations of living or dead animals brought to him from a diſtance by the wind. Though he prefers living to dead animals, yet he devours the moſt putrid carcaſſes. He is fond of human fleſh, and, were he ſtronger, he would perhaps eat no other. Wolves have been known to follow armies, to come in troops to the field of battle, where bodies are careleſsly interred, to tear them up, and to devour them with an inſatiable avidity: And, when once accuſtomed to human fleſh, theſe wolves ever after attack men, prefer the ſhepherd to the flock, devour women, and carry off children. Wolves of this vitious diſpoſition are diſtinguiſhed by the name of *Loups garoux* *, or wolves that ſhould be guarded againſt.

Whole countries are ſometimes obliged to arm, in order to deſtroy the wolves. Princes have particular equipages for this ſpecies of hunting, which is both uſeful and neceſſary. Hunters diſtinguiſh wolves into *young*, *old*, and *very old*. They are known by the tracts of their feet.

* See la Chaſſe du Loup de Gaſton Phœbus.

The

The older the wolf, his feet are the larger. The ſhe-wolf's feet are longer and more ſlender; her heel is alſo ſmaller, and her toes thinner. A good blood-hound is neceſſary for hunting the wolf; and, when he falls into the ſcent, he muſt be coaxed and encouraged; for all dogs have an averſion to the wolf, and proceed with coldneſs in the chaſe. When the wolf is raiſed, the grey-hounds are let looſe in pairs, and one is kept for diſlodging him, if he gets under cover; the other dogs are kept as a reſerve. The firſt pair are let after the wolf, and are ſupported by a man on horſe-back; then the ſecond pair are let looſe at the diſtance of ſeven or eight hundred paces; and, laſtly, the third pair, when the other dogs begin to join and teaze the wolf. The whole together ſoon reduce him to the laſt extremity; and the hunters complete the buſineſs by ſtabbing him with a dagger. The dogs have ſuch a reluctance to the wolf's fleſh, that it muſt be prepared and ſeaſoned, before they will eat it. The wolf may alſo be hunted with beagles or hounds; but, as he darts always ſtraight forward, and runs for a whole day without ſtopping, the chaſe is irkſome, unleſs the beagles be ſupported by grey-hounds, to teaze him, and give the hounds time to come up.

In the country, though men, attended with maſtiffs, beat the buſhes, lay ſnares and baits, dig pits, and ſcatter poiſoned pieces of meat; yet the number of theſe deſtructive animals never decreaſes,

decreaſes, eſpecially in woody countries. The Britiſh pretend to have cleared their iſland of this rapacious creature; and yet I am aſſured that wolves ſtill exiſt in Scotland *. As there is little wood in the ſouthern parts of Britain, it was a more eaſy taſk to extirpate the wolf.

The hair and colour of theſe animals vary with the climate, and ſometimes even in the ſame country. In France and Germany, beſide the common wolves, we find ſome with thicker and more yellow-coloured hair. Theſe wolves, more wild, though leſs deſtructive, than the other kind, never trouble the flocks or the habitations of men, and live ſolely by hunting. In the northern countries, we meet with ſome wolves which are entirely white, and others entirely black; and the latter are larger and ſtronger than the former. The common ſpecies are very generally diffuſed: They are found in Aſia †, Africa ‡, and America §, as well as in Europe. The wolves of Senegal || reſemble thoſe of France; but they are larger and more rapacious. The wolves of Egypt ** are ſmaller than thoſe of Greece. In the Eaſt, and particularly in Perſia, wolves are exhibited

* See Supplement to this article.

† See Le Voyage de Pietro della Valle, vol. iv. p. 4.

‡ Hiſt. Gen. des Voyages, par M. l'Abbé Prevôt, tom. v. p. 85.

§ Le Voyage du Le Clercq, p. 488.

|| Hiſt. Gen. des Voyages, tom. iii. p. 285. Voyage de le Maire aux Iſles Canaries, Cap Verd, &c. p. 100.

** Ariſt. Hiſt. Animal. lib. viii. cap. 28.

hibited as ſpectacles to the people. When young, they are taught to dance, or rather to perform a kind of wreſtling with a number of men. Chardin tells us, that a wolf well educated in dancing, is ſold at 500 French crowns. This fact proves, that theſe animals, by time and reſtraint, are ſuſceptible of ſome kind of education. I have brought up ſeveral of them. When young, or during their firſt year, they are very docile, and even careſſing; and, if well fed, they neither diſturb the poultry, nor any other animal. But, at the age of 18 months or two years, their natural ferocity returns, and they muſt be chained, to prevent them from running off, and doing miſchief. I reared one till the age of 18 or 19 months, in a court along with fowls, none of which he ever attacked; but, for his firſt eſſay, he killed the whole in one night, without eating any of them. Another having broken his chain, run off, after killing a dog with whom he had lived in great familiarity. I kept a ſhe-wolf three years in a large court; and, though ſhut up, when very young, along with a maſtiff dog of the ſame age, ſhe could never ſuffer him to approach even when ſhe came in ſeaſon. She provoked, ſhe attacked, ſhe bit the dog, who at firſt only defended himſelf, but at laſt he worried her.

There is nothing valuable in the wolf but his ſkin, which makes a warm durable fur. His fleſh

flesh is so bad that it is rejected with abhorrence by all other quadrupeds; and no animal but a wolf will voluntarily eat a wolf. The smell of his breath is exceedingly offensive. As, to appease hunger, he swallows indiscriminately every thing he can find, corrupted flesh, bones, hair, skins half tanned and covered with lime, he vomits frequently, and empties himself oftener than he fills. In fine, the wolf is consummately disagreeable; his aspect is base and savage, his voice dreadful, his odour insupportable, his disposition perverse, his manners ferocious; odious and destructive when living, and, when dead, he is almost perfectly useless.

SUPPLEMENT.

IN the history of the wolf I remarked, that this animal was entirely extirpated in England. By way of recompense, it would appear, that these voracious creatures have found out new countries to inhabit. Pontoppidan alledges, that they existed not in Norway, before the year 1718. He says, that during the last war between Sweden and Norway, the wolves passed the

 moun-

mountains by following the provifions of the army *.

Some Englifh authors, who treat of Britifh zoology, have reproached me for maintaining that wolves ftill exift in the northern parts of their ifland. I never did affirm this as a fact, but only faid †, that I was affured that wolves 'ftill exifted in Scotland.' Lord Morton, then Prefident of the Royal Society, a Scotfman worthy of the greateft credit and refpect, and proprietor of large territories in that country, affured me of this fact in the year 1756. To his teftimony I ftill adhere, becaufe it is pofitive, and becaufe the affertion of thofe who deny the fact, amounts to a negative evidence only ‡.

The Vifcount of Querhöent, in his obfervations, tells us, that there are two fpecies of wolves at the Cape of Good Hope, the one black, and the other gray with black fpots. He adds, that

* Pontoppidan's Nat. Hift. of Norway.

† See above, p. 207.

‡ It is amufing to fee the Count de Buffon, notwithftanding the repeated affurances he has had to the contrary, ftill maintaining that there are wolves in the North of Scotland. He appeals to the evidence of the late Earl of Morton. We are fully difpofed to give due weight to an authority fo refpectable, and fo worthy of credit. But we are convinced that the Count has mifapprehended his Lordfhip; for it is univerfally known to the inhabitants of Scotland, that not a fingle wolf has been feen in any part of that country for more than a century paft.

they

they are ſtronger than thoſe of Europe, and their ſkin is thicker, and their teeth more ſanguinary; but that their daſtardlineſs makes them leſs formidable, though, like the ounces, they ſometimes, during the night, come into the ſtreets of the city.

The BLACK WOLF.

I Deſcribe this animal only as a ſupplement to the article *Wolf*; for both, I am perſuaded, belong to the ſame ſpecies. In the hiſtory of the wolf *, it was remarked, that, in the north of Europe, there are ſome wolves which are white, and the others black, and that the black kind are the largeſt. The wolf repreſented in the Plate was brought from Canada. It was totally black, but ſmaller than our wolf: Its ears were ſomewhat larger, more erect, and at a greater diſtance from each other. The eyes were likewiſe a little ſmaller, and appeared to be more diſtant from one another, than in the common wolf. Theſe differences, in my opinion, are too inconſiderable to conſtitute a diſtinct ſpecies. The greateſt difference is that of the ſize. But, as I have oftener than once remarked, all the animals common to the northern parts of Europe and America differ in ſize; and the black wolf of Canada, which is ſmaller than thoſe of Europe, only tends to confirm the general fact. Beſides, as he had been taken when very young, and ever afterwards confined with a chain, conſtraint alone was perhaps ſufficient to prevent

* See above, p. 207.

him

Plate XC.

MOLE.

MOLE.

deprived of its skin.

Plate XCI.

A. Bell Sculp.

MOLE of the CAPE of GOOD HOPE.

Plate LXVIII.

A. Bell Sculp.t

BLACK WOLF.

him from acquiring his full growth. The common wolf is alſo ſmaller and leſs numerous in Canada than in Europe, and the ſavages eſteem it for its ſkin *. The black wolf, the lynx, and the fox, are very numerous in North America; and yet the black fox is very rare, and his ſkin is much more beautiful than that of the black wolf, which makes but a very coarſe fur.

I ſhall only add, that this black wolf reſembled the common wolf, both in figure and diſpoſitions; for he became rapacious only with age, and, like the wolf, he was ferocious without courage.

* Voyage de Saggard Theodat, p. 307.

THE FOX*.

THE fox is famous for craftineſs; and he merits, in ſome meaſure, the reputation he has acquired. What the wolf executes by force alone, the fox performs by addreſs, and often with more ſucceſs. Without combating dogs or ſhepherds, without attacking the flocks, or diſinterring the bodies of the dead, the fox is more certain of procuring his food. He exerts more genius than motion, and all his reſources are within himſelf. Acute as well as circumſpect, ingenious, and patiently prudent, he diverſifies his conduct, and always reſerves ſome art for unforeſeen accidents. Of his own preſervation he is extremely vigilant. Though equally indefatigable, and even nimbler than the wolf,

* 'Dog with a ſharp noſe, lively hazel eyes, ſharp erect ears, 'body tawney red, mixed with aſh colour; fore part of the legs 'black; tail long, ſtrait, buſhy, tipt with white; ſubject to much 'varieties in colour;' *Pennant's Synopſ. of Quad. p.* 152.

In Greek, Αλωπηξ; in Latin, *Vulpes*; in Italian, *Volpe*; in Spaniſh, *Raposa*; in German, *Fuchſs*; in Swediſh, *Raef*; in Poliſh, *Liſzka*; in French, *Le Renard*.

Vulpes; *Geſner. Icon. Anim. Quad. p.* 88.

Vulpes; *Raii Synopſ. Quad. p.* 177.

Canis vulpes, caudis erecta, apice nigro; *Lyn. Syſt. Nat. p.* 59.

Vulpes vulgaris; *Klein. Quad. p.* 71.

Canis fulvis, pileis cineris intermixtis; *Briſſon, Regn. Anim. p.* 239.

wolf, he trusts not entirely to the swiftness of his course. The fox knows how to insure safety by providing himself with an asylum, where he retires from pressing dangers, where he dwells, and where he brings up his young. He is not a vagabond, but lives in a settled domestic state.

This difference, though it appears even among men, has greater effects, and supposes more powerful causes, among the inferior animals. The single idea of a house or settled place of abode indicates a singular attention to self. The choice of situation, the art of making and rendering a house commodious, and of concealing the avenues to it, imply a superior degree of sentiment. The fox is endowed with this quality, and manages it with advantage. He fixes his abode on the border of the wood, in the neighbourhood of cottages: He listens to the crowing of the cocks and the cries of the poultry. He scents them at a distance; he chooses his time with judgment; he conceals his road as well as his design; he slips forward with caution, sometimes even trailing his body, and seldom makes a fruitless expedition. If he can leap the wall, or get in underneath, he ravages the court-yard, puts all to death, and then retires softly with his prey, which he either hides under the herbage, or carries off to his kennel. He returns in a few minutes for another, which he carries off, or conceals in the same manner, but in a different place. In this way he proceeds till the pro-

greſs of the ſun, or ſome movements perceived in the houſe, advertiſe him that it is time to ſuſpend his operations, and to retire to his den. He plays the ſame game with the catchers of thruſhes, wood-cocks, &c. He viſits the nets and bird-lime very early in the morning, carries off ſucceſſively the birds which are entangled, and lays them in different places, eſpecially near the ſides of high-ways, in the furrows, under the herbage or bruſhwood, where they ſometimes lie two or three days; but he knows perfectly where to find them, when he is in need. He hunts the young hares in the plains, ſeizes old ones in their ſeats, never miſſes thoſe which are wounded, digs out the rabbits in the warrens, diſcovers the neſts of partridges and quails, ſeizes the mothers on the eggs, and deſtroys a vaſt quantity of game. The wolf is not more noxious to the peaſant than the fox to the gentleman.

The chaſe of the fox requires leſs apparatus, and is more amuſing than that of the wolf. To the latter every dog has great reluctance; but all dogs hunt the fox ſpontaneouſly and with pleaſure; for, though his odour be ſtrong, they often prefer him to the ſtag or the hare. He may be hunted with terriers, hounds, &c. Whenever he finds himſelf purſued, he runs to his hole; the terriers with crooked legs, or turnſpits, go in with moſt eaſe. This mode anſwers very well when we want to carry off a whole litter of foxes, both mother and

 young.

young. While the mother defends herſelf againſt the terriers, the hunters remove the earth above, and either kill or ſeize her alive. But, as the holes are often under rocks, the roots of trees, or ſunk too deep in the ground, this method is frequently unſucceſsful. The moſt certain and moſt common method of hunting foxes, is to begin with ſhutting up their hole, to place a man with a gun near the entrance, and then to ſearch about with the dogs. When they fall in with him, he immediately makes for his hole; but, when he comes up to it, he is met with a diſcharge from the gun. If he eſcapes the ſhot, he flies with full ſpeed, takes a large circuit, and returns again to the hole, where he is fired upon a ſecond time; but, finding the entrance ſhut, he now endeavours to eſcape by darting ſtraight forward, with the deſign of never reviſiting his forming habitation. He is then purſued by the hounds, whom he ſeldom fails to fatigue, becauſe he purpoſely paſſes through the thickeſt parts of the foreſt or places of the moſt difficult acceſs, where the dogs are hardly able to follow him; and, when he takes to the plains, he runs ſtraight out without ſtopping or doubling.

But the moſt effectual mode of deſtroying foxes, is the laying of ſnares baited with a pigeon, a live fowl, &c. I once ſuſpended on a tree, at the height of nine feet, ſome meat, bread, and bones. The foxes had been at ſevere exerciſe during the night; for, next morning, the earth

all around was beaten, by their jumping, as ſmooth as a barn-floor. The fox is exceedingly voracious; beſide fleſh of all kinds, he eats, with equal avidity, eggs, milk, cheeſe, fruits, and particularly grapes. When the young hares and partridges fail him, he makes war againſt rats, field-mice, ſerpents, lizards, toads, &c. Of theſe he deſtroys vaſt numbers; and this is the only ſervice he does to mankind. He is ſo fond of honey, that he attacks the wild bees, waſps, and hornets. They at firſt put him to flight by a thouſand ſtings; but he retires only for the purpoſe of rolling himſelf on the ground to cruſh them; and he returns ſo often to the charge, that he obliges them to abandon the hive, which he ſoon uncovers, and devours both the honey and wax. In a word, he eats fiſhes, lobſters, graſs-hoppers, &c.

The fox has a great reſemblance to the dog, eſpecially in his internal parts. His head, however, is larger in proportion to his body; his ears are alſo ſhorter, his tail thicker, his hair longer and more buſhy, and his eyes more inclined. He differs ſtill more from the dog by a ſtrong offenſive odour which is peculiar to him, and by his natural diſpoſition; for he is not eaſily, and never fully tamed: He languiſhes when deprived of liberty, and if kept too long in a domeſtic ſtate, he dies of chagrin. He does not copulate with the female dog*: If they have

* See my experiments on this ſubject, article Dog.

no

no rooted antipathy, they are leaſt indifferent to each other. Foxes produce but once a year, and the litter commonly conſiſts of four or five, ſeldom ſix, and never leſs than three. When the female is full, ſhe retires, and ſeldom goes out of her hole, where ſhe prepares a bed for her young. She comes in ſeaſon in the winter; and young foxes are found in the month of April. When ſhe perceives that her retreat is diſcovered, and that her young have been diſturbed, ſhe carries them off one by one, and goes in ſearch of another habitation. The young are brought forth blind; like the dogs, they grow 18 months, or two years, and live 13 or 14 years.

The ſenſes of the fox are equally good as thoſe of the wolf; his ſentiment is more delicate; and the organs of his voice are more pliant and perfect. The wolf ſends forth only frightful howlings; but the fox barks, yelps, and utters a mournful cry like that of the peacock. He varies his tones according to the different ſentiments with which he is affected: He has an accent peculiar to the chaſe, the tone of deſire, of complaint, and of ſorrow. He has another cry expreſſive of acute pain, which he utters only when he is ſhot, or has ſome of his members broken; for he never complains of any other wound, and, like the wolf, allows himſelf to be killed with a bludgeon without complaining; but he always defends himſelf to the laſt with

with great courage and bravery. His bite is obſtinate and dangerous; and the ſevereſt blows will hardly make him quit his hold. His yelping is a ſpecies of barking, and conſiſts of a quick ſucceſſion of ſimilar tones; at the end of which he generally raiſes his voice ſimilar to the cry of the peacock. In winter, and particularly during froſt and ſnow, he yelps perpetually; but, in ſummer, he is almoſt entirely ſilent, and, during this ſeaſon, he caſts his hair. The ſkins of young foxes, and of thoſe taken in ſummer, are of little value. The fleſh of the fox is not ſo bad as that of the wolf: Dogs, and even men, eat it in autumn, eſpecially when he has been fattened with grapes; and his ſkin in winter makes excellent furs. He ſleeps ſound, and may be eaſily approached without wakening: He ſleeps in a round form, like the dog; but, when he only repoſes himſelf, he extends his hind legs, and lies on his belly. It is in this ſituation that he ſpies the birds along the hedges, who have ſuch an antipathy to him, that they no ſooner perceive him, than they ſend forth ſoft ſhrill cries to advertiſe their neighbours of the enemy's approach. The jays and black birds, particularly, follow the fox from tree to tree, ſometimes two or three hundred paces, often repeating the watch-cries.

I brought up ſome young foxes: Their offenſive odour made it neceſſary to keep them in ſtables or places which were not much frequented. This, perhaps, might be one reaſon why they

they were lefs tame than the wolf, which was kept near the houfe. At the age of five or fix months, the young foxes purfued the ducks and fowls; and, therefore, it became neceffary to chain them. I kept two males and a female two years. I tried in vain to make the males copulate with bitches: Though they had never feen females of their own fpecies, and were ftimulated by the ftrongeft defires of Nature, they uniformly rejected the bitches: But, whenever a fhe-fox was prefented to them, though chained, they inftantly covered her, and fhe brought forth four whelps. The young foxes, who, when at liberty, had darted on the poultry, never attempted to touch a fingle fowl, after they were chained. A living hen was generally fixed near them for a whole night; and, though victuals were kept from them for many hours, yet, in fpite of hunger and of opportunity, they never forgot that they were chained, and difturbed not the hen.

The fox is fo extremely fubjected to the influences of climate, that the varieties of this fpecies are almoft as numerous as thofe of the domeftic animals. Moft of our foxes are reddifh; but fome of them are of a filver gray: In both, the end of the tail is white. In Burgundy, the latter are called *coal foxes;* becaufe their feet are remarkably black. Their bodies have alfo the appearance of being fhorter, becaufe they are better clad with hair. There are fome who are

really

really longer than the other kinds, and of a dirty gray colour, nearly the ſame with that of old wolves. But it is uncertain whether this difference conſtitutes a real variety, or is produced by the age of the animal, who, perhaps, grows whiter as he advances in years. In the northern regions, the foxes are of all colours, black, blue, gray, iron-coloured, ſilver gray, white, white with yellow feet, white with black heads, white with the extremity of the tail black, reddiſh with the throat and belly entirely white; and, laſtly, ſome of them have a black line along the ſpine, croſſed with another black line over the ſhoulder. The latter are larger than the other kinds, and have black throats. The common ſpecies are more generally diffuſed than any of the others. We find them in every part of Europe *, in the northern and temperate regions of Aſia †, and in America ‡; but they are very rare in Africa, and in the countries bordering on the Equator. Travellers who pretend to have ſeen them in Calicut §, and other ſouthern provinces of India, have miſtaken the jackal for the fox. Ariſtotle himſelf falls into a ſimilar error, when he tells us ‖, that the foxes of Egypt are ſmaller than thoſe of Greece; for what he calls

* See les Œuvres de Renard, tom. i. p. 175.
† Voyage d'Olearius, tom. i. p. 368.
‡ Voyage de la Hontan, tom. ii. p. 42.
§ Voyage de Pyrard, tom. i. p. 427.
‖ Ariſt. Hiſt. Animal. lib. viii. cap. 18.

the

the ſmall foxes of Egypt are polecats *, whoſe odour is intolerable. Our foxes, which belong originally to cold climates, have ſpread over all the temperate regions, but have never penetrated farther ſouth than Spain and Japan †. What ſhows them to be natives of cold countries is, that all the varieties of the ſpecies are to be found in the high latitudes, and no where elſe: Beſides, they ſupport with eaſe the moſt extreme cold, and live in the neighbourhood of both poles ‡. The fur of the white foxes is not much valued, becauſe the hairs fall eaſily off; the ſilver gray is better; and the blue and croſs kinds are in great requeſt, on account of their rarity; but the black is the moſt precious; next to that of the ſable, it is the beſt and deareſt fur. We find foxes in Spitzbergen §, in Greenland ‖, in Lapland, and in Canada ¶. In the latter

* Aldrovand. Quadrup. Hiſt. p. 197.

† L'Hiſt. du Japon, par Koempfer, tom. i. p. 110.

‡ Narborough's Voyage to the South Seas; Coreal, tom. ii. p. 184; Recueil des Voyages du Nord, tom. ii. p. 113.; Recueil des Voyages qui ont ſervi à l'Etabliſſement de la Comp. des Indes Orient. tom. i. p. 39.

§ Id. ibid.

‖ Foxes abound over all Lapland. They are generally white, though ſome of them are of the common colour. The white furs are leſs eſteemed; but the black, which are more rare, are ſometimes ſold for 40 or 50 French crowns; the hair is ſo fine and ſo long, that it hangs on any ſide you pleaſe; *Oeuvres de Renard, tom.* i. *p.* 175.

¶ Voyages du Pays des Hurons, par Sagard Theodat, p. 304.

 country,

country, there are likewiſe croſſed foxes; the common ſpecies is not ſo red as in Europe; and the hair is longer and more buſhy.

SUPPLEMENT.

Travellers inform us, that the foxes of Greenland reſemble dogs in the form of the head and feet, and likewiſe in their barking; that ſome of them are white, but the greateſt number gray or blue; that they ſeldom change their colour, and, when the hair of the blue kind begins to fall off, it grows pale, and the fur is no longer valuable; that they live upon eggs and birds, and, when they are unſucceſsful in finding this ſpecies of food, they content themſelves with flies, bees, crabs, and what they can procure by fiſhing; and that they dwell in the clefts of rocks *.

At Kamtſchatka, the hair of the fox is very buſhy, and ſo gloſſy and beautiful, that it excels the fineſt Siberian furs. The moſt valuable are the black cheſnuts, thoſe with black bellies and red bodies, and thoſe of an iron colour †.

In Norway there are white, bay, and black foxes, and others which have two black lines on the reins. The latter kind, and thoſe which are wholly black, are moſt eſteemed. Theſe furs are a conſiderable article of commerce: From the

* Hiſt. gen. des Voyages, tom. xix. p. 38.

† Id. ibid. p. 252.

port

Plate LXIX.

FOX.

port of Bergen alone, more than 4000 foxes ſkins are annually exported. Pontoppidan, who often indulges in the marvellous, tells us, that a fox had ranked ſeveral heads of fiſhes into rows, at ſome diſtance from a fiſher's hut; that the people could not imagine what might be his intention, but that, a little afterwards, a crow, which lighted to feed upon the heads, fell a ſacrifice to his cunning device. He adds, that theſe animals make uſe of their tail in catching lobſters, &c. *.

* Pontoppidan's Nat. Hiſt. of Norway.

THE BADGER*.

THE badger is an indolent, diffident, ſolitary animal. He retires to the moſt ſecret places, to the inmoſt receſſes of the foreſt, and there digs a ſubterranean habitation. He ſeems to fly ſociety, and even the light, and ſpends three

* The badger has ſix cutting teeth, and two canine in each jaw; five toes before, five behind, with very long ſtrait claws on the fore-feet; and a tranſverſe orifice between the tail and the anus.—He has ſmall eyes, ſhort rounded ears, a ſhort thick neck, with noſe, chin, lower ſides of the cheeks, and middle of the forehead white; ears and eyes incloſed in a pyramidal bed of black, hairs on the body long and rude, their bottoms a yellowiſh white, middle black, ends aſh-coloured; throat, breaſt, belly, and legs black; tail covered with long hairs, coloured like thoſe of the body; legs very ſhort and thick; claws on the fore-feet very long; a fœtid white matter exudes from the orifice beneath the tail; an animal of a very clumſy make; *Pennant's Synopſ. of Quad. p.* 201.

In Latin, *Meles, Taxus*; in Italian, *Taſſo*; in Spaniſh, *Taſugo, Texon*; in German, *Tachs, Dachs, Dax*; in Swediſh, *Grafſwin*; in Poliſh, *Jazwiec, Borſuc, Kol-dziki, Zbik*; in French, *le Blaireau ou Taiſſon.*

Meles; *Geſner, Quad. p.* 86.

Taxus ſive Meles; *Ray, Synopſ. Quad. p.* 185.

Urſus meles, cauda concolore, corpore ſupra cinereo, ſubtus nigro, faſcia longitudinali per oculos aureſque nigra; *Linn. Syſt. Nat. p.* 70.

Meles pilis ex ſordide albo et nigro variegatis veſtita, capite tæniis alternatim albis et nigris variegato; *Briſſon. Regn. Animal. p.* 253.

fourths

fourths of life in his dark abode, from which he never departs but in queſt of ſubſiſtence. As his body is long, his legs ſhort, his claws, eſpecially thoſe of the fore-feet, very long and ſtrong, he digs and penetrates the earth with greater facility than any other animal. He makes his hole winding and oblique. The fox, who cannot dig with equal dexterity, avails himſelf of the operations of the badger: Being unable to make him quit his habitation by force, the fox practiſes every art to render him uneaſy: He ſtands ſentinel at the entrance of the hole, and even defiles it with his ordure. He afterwards takes poſſeſſion, enlarges, and fits it up for his own accommodation. The badger, though obliged to change his habitation, leaves not his country. He goes to a ſmall diſtance only, where he digs a freſh hole, from which he removes not, except in the night; and, as he never goes far, he returns upon the approach of danger. This is his only mean of ſafety; for he cannot eſcape by flight: His legs are too ſhort for quick motion. When at ſome diſtance from his hole, he is ſoon overtaken by the dogs. They ſeldom, however, accompliſh their purpoſe without aſſiſtance. The hair of the badger is very thick, and his legs, jaws, teeth, and claws, are exceedingly ſtrong. Theſe natural weapons he uſes with courage and dexterity: He lies on his back, reſiſts all the efforts of the dogs, and wounds them in the moſt dangerous manner. He is, beſides, very tena-

cious of life, fights long, makes a brave defence, and perſiſts to the very laſt extremity.

Formerly, when badgers were more common, terriers were trained to hunt and to take them in their holes. The badger defends himſelf by retiring and throwing back the earth, in order to ſtop or bury the dogs. He can only be taken by opening the hole above, after the dogs have puſhed him to its extremity. The people lay hold of him with pincers, and then muzzle him, to prevent his biting. I have kept ſome of them, which had been taken in this manner, a conſiderable time. The young ones are eaſily tamed; they play with the dogs, and follow the perſon who feeds them. But, when taken old, they continue always ſavage. They are neither miſchievous nor ravenous, like the wolf and fox; and yet they are carnivorous. They eat every thing preſented to them, as fleſh, eggs, cheeſe, butter, bread, fiſh, fruit, nuts, grain, roots, &c. But raw fleſh they prefer to every other food. They ſleep the whole night and three fourths of the day; and yet they are ſubject to a lethargic or benumbed ſtate during winter, like the marmottes or dormice. This great quantity of ſleep makes them fat, though they eat but little; and, for the ſame reaſon, they can ſupport hunger with eaſe, and often remain in their holes three or four days together, eſpecially during ſnow.

They keep their habitations extremely clean, and never defile them with their ordure. The

male

male is ſeldom found with the female. When about to bring forth, ſhe cuts down the herbage, bundles it up, and trails it with her feet to the bottom of the hole, where ſhe makes a commodious bed for herſelf and her young. She brings forth in ſummer; and the litter commonly conſiſts of three or four. When ſomewhat advanced, ſhe brings them victuals. She now travels in the night to greater diſtances than formerly. She uncovers the earth from bee-hives, and carries off the honey; ſhe ruſhes into the burrows of rabbits, and ſeizes their young; ſhe likewiſe lays hold of field-mice, lizards, ſerpents, graſſhoppers, and birds eggs, which ſhe conveys to her offspring, whom ſhe often leads to the mouth of the hole, in order to ſuckle or to feed them.

Theſe animals are naturally chilly; Thoſe brought up in the houſe would never quit the corner of the fire, and often approach ſo near as to burn their feet, which do not readily heal. They are ſubject to the itch, and often infect the dogs which enter their holes, unleſs they be afterwards carefully waſhed. The hair of the badger is always rude and greaſy. Between the anus and tail, there is a pretty large fiſſure, penetrating about an inch deep, from which continually exudes an unctuous ill-ſcented liquor, which the animal is fond of ſucking. The fleſh of the badger has not a very bad taſte; and coarſe furs, collars for dogs, coverings for horſes, &c. are made of his ſkin.

We know of no varieties in this ſpecies: We have endeavoured, without ſucceſs, to find the ſow-badger ſpoken of by hunters. Dufouilloux * tells us, that there two ſpecies of badgers, the ſow and the dog-badger; and that the ſow-badger is fatter, whiter, and groſſer, both in the body and head, than the dog-badger. Theſe differences are extremely trivial; and he acknowledges, that they are not to be perceived without an accurate inſpection †. This diſtinction I conſider as a vulgar error, probably founded on the double name of this animal, both in Latin, viz. *meles* and *taxus*, and in French, viz. *blaireau* and *taiſſon*. Beſides, thoſe ſpecies which have varieties, are commonly very numerous and generally diffuſed: That of the badger, on the contrary, is one of the leaſt numerous and moſt limited. We are not certain that they exiſt in America, unleſs we regard as a variety the animal ſent from New York, of which M. Briſſon ‡

* La Venerie de Dufouilloux, p. 72. † Id. ibid.

‡ Meles ſupra alba, infra ex alba flavicans.—The mele alba, from the extremity of the muzzle to the origin of the tail, is one foot nine inches long, and the tail is nine inches in length. The eyes are proportionably ſmall, the legs very ſhort, and the claws white. The whole body is covered with very thick hair, white on the ſuperior, and of a yellowiſh white on the inferior, part of the body. It is found in New York, from whence it was tranſported by M. de Reaumur; *Briſſon. Regn. Animal.* p. 255. He ſhould have added to this deſcription, that it was ſmaller, and that its noſe was ſhorter than our badger. Beſides, we perceive not from the dried ſkin, whether it had the fiſſure or purſe under the tail.

has

Plate LXX.

A. Bell Sculpt.

BADGER

has given a ſhort deſcription under the name of the *white badger*. There are none in Africa; for the animal from the Cape of Good Hope, deſcribed by Kolbe * under the name of the *ſtinking badger*, is a different ſpecies; and it is doubtful whether the *foſſa* of Madagaſcar, mentioned by Flacourt, who ſays it reſembled the French badger, be a real badger, or ſome other animal. It has never been taken notice of by other travellers: Dr. Shaw even ſays, that the badger is totally unknown in Barbary †. It ſeems likewiſe not to exiſt in Aſia: It was not known to the Greeks; for Ariſtotle never mentions it, and the badger has no name in the Greek language. Hence this ſpecies of quadruped, an original native of the temperate climates of Europe, has never ſpread beyond Spain, France, Italy, Germany, Britain, Poland, and Sweden; and it is every where very ſcarce. The badger admits not only of no varieties, but he even approaches not to any other ſpecies. His characters are deeply marked, and very ſingular. The alternate belts upon his head, and the fiſſure under his tail, are perfectly peculiar; and his body is nearly white above, and almoſt black below, which is contrary to all other animals, whoſe bellies are always of a lighter colour than their backs.

* Deſcript. du Cap, par Kolbe, tom. iii. p. 64.
† Shaw's Travels.

THE OTTER*.

THE otter is a voracious animal, but fonder of fiſh than of fleſh: He never quits the margins of rivers or of lakes, and often depopulates the fiſh-ponds. He ſwims with more eaſe than the beaver; for the latter has membranes on his hind feet only, and the toes of his fore feet are ſeparate; but the otter has membranes on all his feet. He ſwims almoſt as quick as he walks. He never goes to the ſea like the beaver; but traverſes the freſh waters and rivers to very conſiderable diſtances. He often ſwims

* The otter has ſix cutting teeth, and two canine, in each jaw; five toes on each foot, each toe connected by a ſtrong membrane. He has ſhort ears, eyes placed near the noſe, thick lips, and large whiſkers. The whole colour of his body is of a deep brown, except two ſmall ſpots on each ſide of the noſe, and another below the chin: His legs are ſhort, thick, looſely joined to the body, capable of being brought to a line with the body, and of performing the part of fins: Each toe is connected to the other by a broad ſtrong web. His length is 23 inches, and that of the tail 16; *Pennant's Synopſ. of Quad. p.* 238.

In Greek, Ενυδρις; in Latin, *Lutra, Lytra, Lutrix, Lutris*; in Italian, *Lodra, Lodria, Loutra*; in Spaniſh, *Nutria*; in German, *Fiſchotter*; in Swediſh, *Witter*; in Poliſh, *Wydra*; in French, *La Loutre.*

Lutra; *Geſner, Hiſt. Quad.* p. 684. *Icon. Animal. Quad.* p. 85.

Lutra; *Ray, Synopſ. Quad.* p. 187. *Klein, Quad.* p. 91.

Muſtela Lutra, plantis palmatis nudis, cauda corpore dimidio breviore; *Linn. Syſt.* p. 66.

Lutra caſtanei coloris. *Briſſon. Regn. Anim.* p. 277.

under

under the water, and, after remaining pretty long, aſcends to the ſurface for air. Properly ſpeaking, he is not an amphibious animal, or an animal that can live equally in air and in water. He is not formed for continuing in the latter element; for, like other terreſtrial creatures, he requires the aid of reſpiration. When in purſuit of a fiſh, if he chances to be entangled in a net, he drowns; and we perceive that he has not had time to cut a ſufficient quantity of the meſhes to effectuate his eſcape. His teeth reſemble thoſe of the martin, but they are proportionally longer and ſtronger. For want of fiſhes, crabs, frogs, water rats, or other food, he gnaws the young twigs, and eats the bark of aquatic trees; he likewiſe eats the young herbage in the ſpring. He is neither afraid of cold nor of moiſture. The female comes in ſeaſon in winter, brings forth in March, and the litter conſiſts of three or four. Young animals are generally beautiful; but the young otter is not ſo handſome as the old. A head ill-ſhaped, ears placed low, eyes ſmall and covered, a lurid aſpect, awkward motions, an ignoble and deformed figure, and a kind of mechanical cry which he repeats every moment, ſeem to indicate a ſtupid animal. The otter, however, acquires induſtry with age, ſufficient, at leaſt, to carry on a ſucceſsful war againſt the fiſhes, who, both with regard to ſentiment and inſtinct, are much inferior to other animals. But I can hardly allow him to have

the

the talents of the beaver, or even the habits aſcribed to him, ſuch as that of always aſcending the rivers, in order to ſwim the more eaſily down the current, when loaded with his prey *; that of fitting up and flooring his houſe to exclude the water; that of hoarding a ſtore of fiſhes, in caſe of a ſcarcity; and, laſtly, that of being eaſily tamed, of fiſhing for his maſter, and even bringing the fiſh into the kitchen. All I know is, that the otters dig no habitations for themſelves; that they take poſſeſſion of the firſt hole they find under the roots of poplars or willows, in the cliffs of rocks, and even in piles of floating wood; that they depoſit their young on beds made of twigs and herbs; that we find in their habitations, heads and bones of fiſhes; that they often change their places of abode; that they baniſh their young at the end of ſix weeks or two months; that thoſe I attempted to tame endeavoured to bite, though they were only taking milk, and unable to eat fiſh; that ſome days after they became more gentle, perhaps becauſe they were weak or ſick; that, ſo far from being eaſily accuſtomed to a domeſtic life, all of them which I attempted to bring up, died young; that the otter is naturally of a ſavage and cruel diſpoſition; that, when he gets into a fiſh pond, he is equally deſtructive as the polecat in a henhouſe; that he kills many more fiſhes than he can eat, and then carries off one in his mouth.

* See Geſner, Hiſt. Quad. p. 685.

Though

Though the otter does not caſt his hair, his ſkin is browner, and ſells dearer in winter than in ſummer; it makes a very fine fur. His fleſh has a diſagreeable fiſhy taſte. His retreats exhale a noxious odour, from the remains of putrid fiſhes; and his own body has a bad ſmell. The dogs chaſe the otter ſpontaneouſly, and eaſily apprehend him when at a diſtance from water, or from his hole. But, when ſeized, he defends himſelf, bites the dogs moſt cruelly, and ſometimes with ſuch force as to break their leg-bones, and never quits his hold till death looſes his jaws. The beaver, however, which is not a very ſtrong animal, purſues the otters, and permits them not to live upon the banks he poſſeſſes.

This ſpecies, though not very numerous, is ſpread over Europe from Sweden to Naples; and we find them even in North America*. They were well known to the Greeks †, and probably extend over all the temperate climates, eſpecially in places which abound with water; for the otter can neither dwell in burning ſands, nor in dry deſerts. He equally flies barren rivers, and thoſe that are too much frequented. I believe none of them are to be found in very warm countries; for the jiya or carigueibeju ‡, which is found at

* See le Voyage de la Hontan, tom. ii. p. 38.

† See Ariſt. Hiſt. Animal. lib. viii. cap. 5.

‡ Jiya quæ et carigueibeju appellatur a Braſilienſibus; Marcg. Hiſt. Braſil. p. 234. Lutra Braſilienſis; Ray, Synopſ. Animal. Quadrup.

at Cayenne*, and has been named the Brasilian otter, appears to be a different species: Whereas the North American otter resembles the European in every article, except that his fur is blacker and finer than that of the Swedish or Muscovite otter†.

SUPPLEMENT.

PONTOPPIDAN assures us, that, in Norway, the otters frequent the salt as well as the fresh waters; and that they live among the fragments of rocks, from which the hunters decoy them by imitating their voice, which consist of a low kind of whistle. He adds, that they eat only the fatty parts of fishes; and that a tamed otter, which was fed with milk, brought fish daily to the house‡.

In some notes communicated by M. de la Borde, I find that there are three species of otters in Cayenne; the black, which weighs 40 or 50 pounds; the yellowish, which weighs 20 or

Quadrup. p. 189. Lutra pollice digitis breviore; Linnæus. Lutra atri coloris, maculâ sub gutture flavâ; Brisson. Regn. Animal. p. 278.

* Lutra nigricans, caudâ depressâ et glabrâ; Barrere, Hist. de la France Equinoxiale, p. 155.

† See le Voyage de la Hontan, tom. i. p. 84.

‡ Pontop. Nat. Hist. of Norway.

25 pounds;

25 pounds; and the ſmall grayiſh kind, which weighs not above three or four pounds. He further remarks, that theſe animals are very frequent in Guiana, along the rivers and marſhes where fiſhes abound: They ſometimes appear in numerous troops, and are ſo fierce that they cannot be approached. Their bite is cruel, and they defend themſelves againſt the dogs. They litter in holes which they dig in the banks. They are often tamed and brought up in houſes. I have remarked, ſays M. de la Borde, that all the animals of Guiana are eaſily accuſtomed to a domeſtic ſtate, and become even troubleſome by their familiarity.

M. Aublit, a learned botaniſt formerly quoted, and M. Oliver, ſurgeon to the King, who have long reſided in Cayenne, affirm, that there are otters in that country ſo large, that they weigh 90 or 100 pounds. They live in the great and unfrequented rivers, and their heads often appear above the water. Their cry is heard at great diſtances; their hair is very ſoft, but ſhorter than that of the beaver, and generally of a dark brown colour. They live upon fiſhes, and eat likewiſe the grains which fall into the water from the banks of the rivers.

I have added the figure of a ſmall animal ſent me from Guiana, under the name of *the ſmall freſh-water otter of Cayenne*, which appears to be the third ſpecies mentioned by M. la Borde. It is only ſeven inches long, from the

the tip of the nofe to the extremity of the body. The tail of this fmall otter, like that of the water-rat, has no hair; its length is fix inches feven lines, and five lines thick at the origin, diminifhing gradually to the extremity, which is white, though the reft of the tail is brown; and, in place of hair, it is covered with a rough granulated fkin, like fhagreen; it is flat below and convex above. The whifkers, and the long hairs under the eyes, are about an inch in length. All the under part of the body and head, as well as the fore-part of the fore-legs, is white. The top and fides of the head and body are marked with large brownifh black fpots, and the intervals are of a yellowifh gray colour. The black fpots correfpond on each fide of the body. There is a white fpot above the eye. The ears are large, and feem to be longer than thofe of the common otter. The legs are fhort; the fore-feet have five unconnected toes; there are the fame number in the hind-feet, but they are connected with membranes.

Plate LXXI.

A. Bell Sculpt.

OTTER

Plate LXXII.

A. Bell Sculp.t

SMALL OTTER OF GUIANA.

THE MARTIN*.

MOST naturalifts have defcribed the martin and the pine-weafel, or yellow breafted martin, as animals of the fame fpecies. Gefner † and Ray, in imitation of Albertus, affirm, that they intermix promifcuoufly. This fact, however, which is fupported by no other evidence, appears, at leaft, to be doubtful: I believe, on the contrary, that thefe animals have no intercourfe, but form two diftinct and independent.

* This animal has broad rounded ears, lively eyes, a brown head, tinged with red; the body, fides, and legs are covered with hair, afh-coloured at the bottoms, bright chefnut in the middle, and black at the tips; the throat and breaft are white, and the belly deep brown; the tail is full of hair, and of a dufky colour; the feet are broad, and covered at bottom with thick down; the claws are white; and the length of the body is eighteen inches, and of the tail ten; *Pennant's Synopf. of Quad.* *p.* 215.

In Latin, *Martes domeftica, Foyna, Gainus, Schifmus*; in Italian, *Foina, Fouina*; in German, *Hukfs marder*; in French, *la Fouine*.

Martes domeftica; *Gefner. Icon. Anim. Quad. p.* 97.

Martes, aliis Foyna; *Raii Synopf. Quad. p.* 200.

Muftela Martes, pedibus fiffis, corpore fulvo nigricante, gula pallida; *Lynn. Syft. Nat. p.* 67.

Martes faxorum non fagorum, feu domefticus; *Klein. Quad. p.* 64.

Muftela pilis in exortu albidis, caftaneo colore terminatis, veftita, gutture albo; *Briffon. Regn. Animal. p.* 246.

† Gefner, Hift. Quad. p. 76. Ray, Synopf. Quad. p. 200.

pendent ſpecies. To illuſtrate this point, I ſhall give a few reaſons. If the pine-weaſel were only a wild martin, or the martin a domeſtic pine-weaſel, the firſt would conſtantly preſerve the ſame characters, and the latter would be ſubject to variations; as the wild cat uniformly remains the ſame, while the domeſtic cat aſſumes all ſorts of colours. The martin, on the contrary, never varies, but preſerves its peculiar characters as conſtantly as the pine-weaſel retains thoſe which are proper to it. This alone is a ſufficient proof, that theſe two animals are ſpecifically different, and that the one is not a ſimple variety of the other. Beſides, there is no reaſon for regarding the martin as a domeſtic animal: He is no more domeſtic than the fox or the polecats, which, like him, approach the habitations of men in queſt of their prey; and he has no greater communication with mankind than the other animals we call wild or ſavage. The martin, therefore, differs from the pine-weaſel both in diſpoſition and temperament; for the latter flies the open fields, lives in the moſt ſecret receſſes of the foreſt, and is never numerous in cold climates: But the martin approaches our habitations, takes up his abode in old buildings, in hay-lofts, and in holes of the walls. The ſpecies is likewiſe ſpread in great numbers over all the temperate countries, and is even found in warm regions, as in Madagaſcar *, and

* See Voyages de Struys, tom. i. p. 30.

the

the Maldiva iſlands *, and is never ſeen in high latitudes.

The martin has a fine countenance, a lively eye, ſupple limbs, and a flexible body. His movements are all exceedingly nimble; he rather bounds and leaps, than walks. He climbs rough walls with eaſe and alacrity; enters the pigeon or hen-houſes, eats the eggs, pigeons, fowls, &c. and the female often kills great numbers, and tranſports them to her young. He likewiſe ſeizes mice, rats, moles, and birds in their neſts. I kept one of theſe animals a conſiderable time. He tamed to a certain degree; but never formed any attachment, and continued always ſo wild that it was neceſſary to chain him. He made war againſt the rats, and attacked the poultry, whenever they came in his way. He often got looſe, though chained by the middle of the body. At firſt, he went to no great diſtance, and returned in a few hours, but without diſcovering any ſymptoms of joy, or of affection to any particular perſon. He, however, called for victuals like a cat or a dog. Afterwards he made longer excurſions, and, at laſt, he thought proper never to return. He was then about a year and a half old, ſeemingly the age at which nature aſſumes her full aſcendency. He eat every thing preſented to him, except ſalad and herbs. He was fond of honey, and preferred hemp-ſeed to every other grain. We remarked, that he drank

* Voyage de Pyrard, tom. i. p. 132.

drank very often; that he fometimes flept two days fucceffively; that, at other times, he would fleep none for two or three days; that, before fleeping, he folded himfelf in a round form, and covered his head with his tail; and that, while awake, his motions were fo violent, fo perpetual, and fo incommodious, that, though he had not difturbed the fowls, we found it neceffary to chain him, to prevent him from breaking every thing. We have had in our poffeffion feveral other martins of a more advanced age, which had been taken in nets; but they continued to be totally favage, bit all who attempted to touch them, and would eat nothing but raw flefh.

Martins, it is faid, go with young as long as cats. We meet with young ones from fpring to autumn; and, therefore, it is probable that they bring forth more than once a-year. The younger females litter only three or four at a time; but the more aged produce fix or feven. When about to bring forth, they take up their abode in magazines of hay, in holes of walls, which they ftuff with ftraw and herbs, in clefts of rocks, or in the hollow trunks of trees; and, when difturbed, they remove their young, who feem to arrive very foon at maturity; for the one I kept had nearly attained its full growth in one year: Hence we may conclude, that thofe animals live eight or ten years only. They have a kind of mufky fmell, which is not very difagreeable. The pine-weafel and the martin, like fome other animals,

animals, have two veſicles, one on each ſide of the extremity of the rectum, which contain an odoriferous matter, ſimilar to that procured from the civet cat. Their fleſh retains a little of this odour; and yet that of the pine-weaſel is not bad. The fleſh of the martin is more diſagreeable, and his ſkin is likewiſe much leſs valuable.

SUPPLEMENT.

I Have added the figure of an American animal, which was ſent from Guiana to M. Aubry, curate of St. Louis. Though this animal wants the teeth, it is ſo ſimilar in all the other parts of the body to the common martin, that it may be regarded as a variety of the ſame ſpecies. It differs from the martin only in having the colour of the hair ſprinkled with black and white, a ſhorter tail, and ſpots on the head. The martin of Guiana is three or four inches longer than the European; but the tail is proportionally ſhorter. The muzzle ſeems alſo to be longer; it is black, and the blackneſs extends above the eyes, paſſes under the ears along the neck, and loſes itſelf in the brown hair of the ſhoulders. There is a large white ſpace above the eyes, which ſpreads upon the front, ſurrounds the ears, forms a narrow band along the neck, and diſappears on the ſhoulders. The ears are perfectly ſimilar to thoſe of the

the martin. The top of the head is gray, mixed with white; the neck is brown interſperſed with aſh-coloured hairs; and the body is covered with a mixture of white and blackiſh hairs. Theſe hairs are gray and aſh-coloured at their origin, then brown, and black and white at the extremities. The under part of the jaw is of a blackiſh brown colour, which extends under the neck, and vaniſhes towards the belly, which is of a bright brown or cheſnut. The legs and feet are covered with ſhining reddiſh black hair; and the toes have a greater reſemblance to the toes of the ſquirrel and rat than to thoſe of the martin. The great toes of the fore-feet are four lines long; but thoſe of the hind-feet only two. The tail is more buſhy at the origin than the extremity, and the hair of it is cheſnut or a bright brown mixed with black.

We have given the figure of another Cayenne animal, which ſeems to have a great analogy to the former. It was drawn from the life at the fair of St. Germain, in 1768, and meaſured 15 inches from the tip of the noſe to the origin of the tail, which was eight inches, and more buſhy at the root than at the extremity. This animal is ſhort legged like our martins: The form of the head approaches nearly to that of the martin; but in the ears there is no reſemblance. The body is covered with woolly hair: There are five toes on each foot, armed with ſmall claws like thoſe of the martin.

Plate LXXIV.

A. Bell Sculp.^t

MARTIN of GUIANA.

Plate LXXIII.

A. Bell Sculp.t

MARTIN

Plate LXXV.

A. Bell Sculpt.

SMALL MARTIN of GUIANA.

The PINE-WEASEL, or YELLOW-BREASTED MARTIN*.

THIS animal is a native of northern regions, where the ſpecies is ſo numerous, that the quantity of their furs annually conſumed is perfectly aſtoniſhing. There are very few of them in the temperate climates, and they exiſt not in very warm countries. Some of them are found in the foreſts of Burgundy, and likewiſe in thoſe of Fountainbleau; but, in general, they are as rare in France as the martin is frequent. There are none of theſe animals in Britain; becauſe they have no extenſive foreſts in that country. They fly equally inhabited countries and uncovered fields. They dwell in the woods, and conceal not themſelves among

* Weaſel with a yellow breaſt and throat; the hair is of a dark cheſnut colour, and of far ſuperior fineneſs to the former; in other reſpects agreeing with it; *Pennant's Synopſ. of Quad. p.* 216.

In Latin, *Martes, Marta, Marterus*; in Italian, *Marta, Martura, Marturo, Martorello, Martire*; in Spaniſh, *Marta*; in German, *Field marder, Wild Marder*; in Swediſh, *Mard*; in French, *La Marte*

Martes ſylveſtris, martis altera ſpecies nobilior; *Geſner. Icon. Animal. Quad*. p. 99.

Martes; *Ray, Synopſ. Animal. Quad. p.* 200.

Muſtela martes; *Klein. Hiſt. Nat. Quad. p.* 64.

 the

the rocks, but traverſe the foreſt and climb the trees. They live by hunting, and deſtroy prodigious quantities of birds, by eating their eggs. They ſeize ſquirrels, field-mice, &c. They alſo eat honey like the martin and polecat. They never appear in the open fields, in the meadows, or in the vineyards. They approach not the dwellings of men; and they differ ſtill farther from the martin in their manner of making their eſcape from the hunters. When the martin is purſued by a dog, he inſtantly runs to his hay-loft or his hole. The pine-weaſel, on the contrary, runs a long time before the dogs, then climbs the trunk of a tree, and, from this ſtation, he views them as they paſs. The track which he leaves in the ſnow appears to be that of a large animal, becauſe he always leaps, and both feet make but one impreſſion. He is ſomewhat larger than the martin, and yet his head is ſhorter. His legs are longer, and conſequently he runs more eaſily. His neck is yellow; but that of the martin is white. His hair is finer, more buſhy, and leſs ſubject to fall off. The female prepares not a bed for her young; and yet lodges them moſt commodiouſly. The ſquirrels build neſts in the tops of trees, with equal art as the birds. When the pine-weaſel is about to bring forth, ſhe climbs to the ſquirrel's neſt, baniſhes the poſſeſſor, enlarges the entry to it, and there depoſits her young. She likewiſe uſes the old neſts of ducks or buzzards, and holes of ancient

trees, from which ſhe diſlodges the wood-peckers and other birds. She brings forth in the ſpring, and her litter conſiſts of two or three only. Though her young come into the world blind, they ſoon acquire a conſiderable growth. She brings to them eggs and birds; and afterwards leads them out to hunt along with herſelf. The birds are ſo well acquainted with thei enemies, that, when they perceive the pine-weaſel, they utter the ſame mournful cry to advertiſe his approach, as when they ſee a fox. What ſhows that the birds are animated with hatred, rather than fear, is, that they follow at a diſtance, and utter this peculiar cry againſt all carnivorous animals, as the wolf, the fox, the pine-weaſel, the wild cat, &c. but never againſt the ſtag, the roe, the hare, &c.

The pine-weaſels are very frequent in the northern parts of America, Europe, and Aſia. Many of them are brought from Canada, and they extend as far as Hudſon's bay *; and, in Aſia, as far north as the kingdom of Tonquin † and the empire of China ‡. They ought not to be confounded with the ſable, an animal whoſe fur is much more precious. The ſable is black; but the pine-weaſel is brown and yellow. The moſt valuable part of the ſkin of the latter is the brown, which extends along the whole back to the extremity of the tail.

* Lade's Voyages, vol. ii. p. 227. † Tavernier, tom. iv. p. 182. Hiſt. Gen. des Voyages, tom. vii. p. 117. ‡ Hiſt. Gen. des Voyages, tom. vi. p. 562.

THE POLECAT*.

THE polecat has a great reſemblance to the martin in temperament, diſpoſition, manners, and figure. Like the latter, he approaches our habitations, mounts on the roofs, takes up his abode in hay-lofts, barns, and unfrequented places, from which he iſſues during the night only in queſt of prey. He ſteals ſlily into the court-yards, voleries, and pigeon-houſes, where, with leſs noiſe than the martin, he makes greater havock, cutting off the heads of all the fowls, and then tranſporting them one by one to his magazine. If, as frequently happens, he cannot carry them off entire, on account of the ſmallneſs of the entry to his hole, he eats the

* The polecat has the ſpace round the mouth, and the tips of the ears white; the head, body, and legs, of a chocolate colour, almoſt black; on the ſides, the hairs are of a tawny caſt, and the tail is black; the length of the body is 17 inches, and of the tail 6.

In Latin, *Putorius*; in Italian, *Foetta*, *Puzolo*; in German, *Iltis*, *Ulk*, *Buntſing*; in Poliſh, *Vydra*, *Tchorz*; in French, *Le Putois*.

Putorius; *Geſner. Hiſt. Quad.* p. 767. *Icon. Quad.* p. 99. *Raii Synopſ. Quad.* p. 199.

Muſtela putorius, pedibus fiſſis, corpore flavo nigricante; ore auriculiſque albis; *Linn. Syſt.* p. 67.

Muſtela pilis in exortu ex cinereo albidis, colore nigricante terminatis, veſtita, oris circumferentia alba; *Briſſon. Regn. Anim.* p. 249.

brains,

Plate LXXVI.

A. Bell Sculp.

YELLOW BREASTED WEASEL

brains, and takes only their heads along with him. He is likewiſe very fond of honey, attacks the hives in winter, and forces the bees to abandon them. He never retires far from the abodes of men. The ſpring is their ſeaſon of love: The males fight for the female on the roofs of houſes. They afterwards leave her, and go to paſs the ſummer in the fields or in the woods. The female, on the contrary, continues in her habitation till ſhe brings forth, and does not lead off her young till toward the end of ſummer. She litters three or four, and ſometimes five, ſuckles them but a ſhort time, and accuſtoms them early to eat blood and eggs.

In the villages, they live upon poultry; and, in the country, they hunt for prey. During the ſummer, they take up their abode in rabbit-holes, in the cliffs of rocks, or in the hollow trunks of trees, from which they iſſue out in the night, and roam about the fields and woods, ſearching for the neſts of partridges, larks, and quails. They climb trees in queſt of the neſts of other birds. They lie in watch for rats, field-mice, and moles; and carry on a perpetual war againſt the rabbit, who cannot eſcape them, as they enter with eaſe into his hole. A ſingle family of polecats is ſufficient to deſtroy a whole warren. This would be a ſimple method of diminiſhing the number of rabbits in places where they are too abundant.

The

The polecat is ſomewhat leſs than the martin: His tail is alſo ſhorter, his muzzle ſharper, and his hair blacker and more buſhy: He has white hair on his front, and likewiſe on the ſides of the noſe and round the mouth. He differs ſtill more from the martin in his voice; the martin has a ſharp piercing cry; the cry of the polecat is more blunt. Each of them, as well as the pine-weaſel and ſquirrel, have a deep grunting tone, which they repeat often when irritated. Laſtly, the odour of the martin is very different from that of the polecat, which, inſtead of being agreeable, is extremely fœtid; and, from this circumſtance, the animal obtained its Latin name *putorius!* He ſends forth this inſupportable odour to a great diſtance, eſpecially when irritated. The dogs will not eat the fleſh of the polecat; and even his ſkin, though good, is in no eſtimation, becauſe it never loſes entirely its natural ſmell. This odour proceeds from two veſicles near the anus, from which an unctuous matter continually exudes; and the effluvia of it is extremely offenſive in the polecat, ferret, weaſel, badger, &c.; but it conſtitutes, on the contrary, a ſpecies of perfume, in the civet-cat, pine-weaſel, martin, &c.

The polecat ſeems to be confined to the temperate climates: Few or none of them are found in the northern regions; and, in warm countries, they are ſtill more rare than the pine-weaſel.

The

Plate LXXVII.

A. Bell Sculpt.

POLE CAT.

The meles Surinamenſis, or ſtifling weaſel, is an animal of a different ſpecies; and the polecat appears to be bounded, in Europe, from Italy to Poland. This animal, it is certain, avoids the cold; for, in winter, he retires into the houſes, and his ſteps are never ſeen in the ſnow, either in the woods or in fields which are diſtant from the habitations of men: He, perhaps, is equally averſe to great heat; for he is never found in warm climates.

THE FERRET*.

WHETHER the ferret and polecat belong to different ſpecies, has been a ſubject of doubt with ſome naturaliſts †. The reſemblance of colour, in ſome ferrets, to that of the polecat, may have given riſe to this doubt. The polecat, however, is a native of temperate climates, and is a wild animal, like the martin. But the ferret is a native of warm countries, and cannot ſubſiſt, even in France, unleſs in a domeſtic ſtate. The ferret alone is uſed in hunting rabbits, becauſe he is more eaſily tamed than the polecat. Both, indeed, have a ſtrong and diſagreeable odour. But the moſt convincing proof of their being different animals, is, that they have no intercourſe with one another, and differ in a num-

* This animal has a very ſharp noſe, red fiery eyes, and round ears; the colour of the whole body is a very pale yellow; its length is about 14 inches, and that of the tail 5; *Pennant's Synopſ. of Quad.* p. 214.

In Latin, *Viverra, Furo, Furunculus*; in Spaniſh, *Huron, Furam*; in German, *Frett, Frettel, Furette*; in Poliſh, *Laſka*; in French, *Le Furet.*

Viverra, Furo, Ictis; *Geſner. Hiſt. Quad.* p. 762. *Icon. Quad. p.* 101.

Muſtela pilis ſubflavis longioribus, caſtaneo colore terminatis, veſtita; viverra, mas. Muſtela pilis ex albo ſubflavis veſtita; viverra fœmina; *Briſſon. Regn. Anim. p.* 177.

Muſtela Furo, pedibus fiſſis, oculus rubicundus; *Linn. Syſt.* p. 68.

† Linn. Syſt. ibid.

ber

ber of eſſential characters. The body of the ferret is thinner and more lengthened, his head narrower, and his muzzle ſharper, than thoſe of the polecat. He is not endowed with the ſame inſtinct in finding ſubſiſtence, but, at leaſt in our climates, muſt be carefully nouriſhed within doors, and cannot exiſt in the fields; for thoſe which are loſt in the burrows of rabbits never multiply, but probably periſh during the winter. The ferret alſo, like other domeſtic animals, varies in colour; and is equally common in warm regions *, as the polecat is rare.

The female ferret is leſs than the male: When in ſeaſon, ſhe is ſo extremely ardent, that, we are aſſured, ſhe dies, if her deſires are not gratified †. Ferrets are brought up in caſks or boxes, where they are furniſhed with beds of hemp or flax. They ſleep almoſt continually. Whenever they awake, they ſearch eagerly for food, which conſiſts of bran, bread, milk, &c. They produce twice every year: The female goes ſix weeks with young: Some of them devour their young as ſoon as they are brought forth, inſtantly come again in ſeaſon, and have three litters, which generally conſiſt of five or ſix, and ſometimes ſeven or eight, and even nine.

This animal is by nature a mortal enemy to the rabbit. Whenever a dead rabbit is, for the firſt time, preſented to a young ferret, he flies

* The ferret is found in Barbary, and is called *Nimſe*. See Shaw's Travels.

† Geſner. Hiſt. Quad. p. 763.

upon

upon it, and bites it with fury; but if it be alive, he ſeizes it by the throat or the noſe, and ſucks its blood. When let into the burrows of rabbits, he is muzzled, that he may not kill them in their holes, but only oblige them to come out, in order to be caught in the nets. If the ferret is let in without a muzzle, he is in danger of being loſt; for, after ſucking the blood of the rabbit, he falls aſleep; and even ſmoking the hole is not a certain method of recalling him; becauſe the holes have often ſeveral entries which communicate with each other, and the ferret retires into one of theſe, when incommoded with the ſmoke. Boys likewiſe uſe the ferret for catching birds in the holes of walls or of old trees.

According to Strabo, the ferret was brought from Africa into Spain; which is by no means improbable, as Spain is the native climate of rabbits, and the country where formerly theſe animals moſt abounded. It may, therefore, be preſumed, that, in order to diminiſh their number, which perhaps was incommodious, ferrets were imported for the purpoſe of hunting rabbits in a profitable manner, inſtead of multiplying martins, which would have deſtroyed the rabbits without bringing any advantage to the hunters.

The ferret, though eaſily tamed and rendered docile, is extremely iraſcible. His odour is always diſagreeable; but, when irritated, it becomes much more offenſive. His eyes are

lively,

lively, and his aſpect is inflammatory; all his movements are nimble, and he is, at the ſame time, ſo vigorous, that he can eaſily overcome a rabbit, though at leaſt four times larger than himſelf.

Notwithſtanding the authority of commentators, it is ſtill uncertain whether the ferret be the *ictis* of the Greeks. 'The ictis,' ſays Ariſtotle, 'is a ſpecies of wild weaſel, ſmaller than the 'little Malteſe dog, but reſembling the weaſel 'in its hair, in the whiteneſs of the under part 'of the body, and likewiſe in the craftineſs of 'its manners. It admits of being tamed; and 'makes great havock among the bee-hives, be-'ing extremely fond of honey. It alſo attacks 'birds, and, like the cat, has an oſſeous penis *.' 1. There appears to be a contradiction in ſaying that the ictis is a ſpecies of wild weaſel, which admits of being tamed; for the common weaſel, which, in this country, is the moſt ſavage of the two, is perfectly irreclaimable. 2. The ferret, though larger than the weaſel, can never be compared for ſize to the lap-dog. 3. The ferret appears not to have the cunning of the weaſel, nor indeed any craftineſs at all: Laſtly, he never attacks the bee-hives, nor is he fond of honey. I enquired of M. le Roi, inſpector of the royal chaſes, concerning this laſt fact. His anſwer follows: 'M. de Buffon may be aſſured, that 'the ferrets have no predilection for honey;

* Hiſt. Anim. lib. ix. cap. 6.

'but, when hungry, may be made to eat it.
'I have fed them ſeveral days with bread ſoak-
'ed in water mixed with honey. The two laſt
'days, they eat it in pretty large quantities; but
'the weakeſt of them began to be ſenſibly ema-
'ciated.' This is not the firſt time that M. le Roi has obliged me with important facts. Having no ferrets, I tried the ſame experiment on the ermine, by giving him only pure honey to eat, and a little milk for drink: But he died in a few days. Thus neither the ermine nor the ferret are fond of honey, like the ictis of the ancients; which inclines me to think, that the word *ictis* is perhaps only a generic name; or, if it marks any particular ſpecies, it ought rather to be applied to the martin or polecat, both of which poſſeſs the craftineſs of the weaſel, attack the bee-hives, and are extremely fond of honey.

Plate LXXVIII.

A. Bell Sculp.t

FERRET.

Plate LXXIX.

A. Bell Sculp.t

FERRET.

THE WEASEL*.

THE weaſel is as common in temperate and warm climates †, as it is rare in the northern regions. The ermine, on the contrary, abounds in the north, is ſeldom met with in temperate climates, and never in warm countries. Theſe animals, therefore, form two diſtinct ſpecies. The common weaſel ſometimes turns white during the winter, even in our climate. This circumſtance might give riſe to its being regarded as of the ſame ſpecies with the ermine. This mark is common to both: But there are others in which they differ. The ermine is reddiſh in ſummer, and white in winter; but the end of its tail is uniformly black. The end of the weaſel's tail is yellow, even when the animal

* The weaſel has ſmall rounded ears; the whole upper part of the body is of a tawny brown colour, and the under part is entirely white. It has a brown ſpot beneath the corners of the mouth. The length of its body is between ſix and ſeven inches, and of the tail two and a half.

In Greek, Γαλη; in Latin, *Muſtela*; in Italian, *Dennola, Ballottula, Benula*; in Spaniſh, *Comadreia*; in German, *Wiſele*; in French, *La Belette*; in Engliſh, *Weaſel, Weeſel, Foumart, Whitred.*

Muſtela proprie ſic dicta; *Geſner. Hiſt. Quad.* p. 752. *Icon. Quad.* p. 99.

Muſtela vulgaris; *Ray, Synopſ. Quad.* p. 195. *Klein, Quad.* p. 62.

Muſtela ſupra rutila, infra alba; *Briſſon, Regn. Anim.* p. 242.

Muſtela nivalis, pedibus fiſſis, corpore albo, caudæ apice vix pilis ullis nigris; *Linn. Syſt. p.* 69.

† The weaſel is found in Barbary, and is called *Fert-el Steil:*; Shaw's Travels.

turns white in winter. It is, befides, always of a fmaller fize, and its tail is much fhorter than that of the ermine. The weafel dwells not, like the ermine, in woods and deferts, but near the habitations of men. I have kept both fpecies together; but animals which differ in climate, in conftitution, and in difpofition, never intermix. It is true, fome weafels are larger or fmaller than others; but the difference never exceeds an inch in the whole length of the body. But the ermine is two inches longer than the largeft weafel. Neither of them can be tamed, but are kept wild in iron cages. Neither of them voluntarily eat honey, nor attack the bee-hives like the polecat and martin. Thus the ermine is not the favage weafel, nor the ictis of Ariftotle, which, he fays, is eafily tamed, and very fond of honey. The weafel and ermine, inftead of being eafily tamed, are fo wild, that they will not eat when any perfon looks at them: They are in perpetual agitation, always endeavouring to conceal themfelves: And, if a man wants to keep them, he muft furnifh them with a bundle of wool or flax, in which they wrap and hide themfelves from the light. Thither they drag every thing they can lay hold of, and never eat but in the night. They allow frefh meat to lie three or four days, and even till it corrupt, before they touch it. They fleep three fourths of the day, and watch their prey during the night. When a weafel gets among the poultry, he attacks not the cocks or old hens,

but

but ſingles out the chickens and young birds, whom he kills with a ſingle bite on the head, and then carries off the whole one by one. He likewiſe breaks the eggs, and ſucks them with incredible avidity. In winter, they generally live in granaries and barns, where they often remain during the ſpring, and bring forth their young among the hay and ſtraw. During this period the female makes war, with more ſucceſs than the cat, againſt the rats and mice, who cannot eſcape her, becauſe ſhe follows them into their holes. She mounts the pigeon-houſes, and deſtroys the pigeons, ſparrows, &c. In ſummer they retire farther from houſes, eſpecially into low grounds, about mills, along rivulets, conceal themſelves among bruſh-wood, in order to ſurpriſe birds, and often take up their abode in old willows, where the female brings forth her young: She prepares for them a bed of ſtraw, leaves, and other herbage, and litters, in the ſpring, from three to five. The young, like thoſe of the polecat, pine-weaſel, and martin, are brought forth blind; but they very ſoon acquire growth and ſtrength enough to follow their mother in the chaſe. The weaſels attack ſerpents, water-rats, moles, field-mice, &c. and, over-running the meadows, they devour quails and partridges, together with their eggs. Their motion conſiſts of unequal and precipitant leaps; and, when they want to mount a tree, they make a ſudden bound, by which they are at once ele-

vated ſeveral feet high. They leap in the ſame manner when they attempt to ſeize a bird.

Theſe animals, as well as the polecat and ferret, have a diſagreeable odour, which is ſtronger in ſummer than in winter; and, when purſued or irritated, their ſmell is felt at a conſiderable diſtance. They move always with caution and with ſilence, and never cry, but when they are hurt. Their cry is ſharp, rough, and very expreſſive of reſentment. As their own odour is offenſive, they ſeem not to be ſenſible of a bad ſmell in other bodies. A peaſant in my neighbourhood took three new-littered weaſels out of the carcaſe of a wolf that had been hung on a tree by the hind feet. The wolf was almoſt entirely putrified, and the female weaſel had made a neſt of leaves and herbage for her young in the thorax of this putrid carcaſe.

SUPPLEMENT.

THE author here ingenuouſly quotes a letter he received from the Counteſs of Noyan, dated at the Caſtle of Manceliere in Britany, July 20, 1771, in which that Lady aſſures him, that he had injured the character of the weaſel, by alledging that no art could reclaim or render him docile; becauſe ſhe had tried the experiment upon a young weaſel taken in her garden,

den, which ſoon learned to recogniſe and to lick the hand from which it received its food, and became as familiar, careſſing, and frolickſome, as a dog or ſquirrel.

This fact the author had ſtill farther confirmed by a ſimilar experiment made by M. Giely de Mornas, who trained a young weaſel ſo completely, that the animal followed him wherever he went. The method of taming them is, to ſtroke them often and gently over the back, and to threaten, and even beat them, when they bite. Their odour is never offenſive, but when they are irritated. They are fed with milk, boiled fleſh, and water; and unleſs they be ſtarved, never eat honey, although preſented to them.

THE ERMINE*.

THE weaſel with a black tail, is called the *ermine*, and *roſelet* by the French; the *ermine* when it is white, and the *roſelet* when it is red or yellowiſh. Though leſs frequent than the ordinary weaſel, they are ſtill found in conſiderable numbers, eſpecially in the ancient foreſts, and ſometimes, during winter, in fields bordering upon woods. It is eaſy, at all ſeaſons, to diſtinguiſh them from the common weaſel;

* The upper part of the body is of a pale tawny brown colour; the edges of the ears and ends of the toes, of a yellowiſh white; the throat, breaſt, and belly white; the end of the tail black: The length of the body is ten inches, and of the tail five and a half. In the north of Europe, this animal becomes entirely white at the approach of winter, except the end of the tail; and it reſumes its brown colour in the ſpring; *Pennant's Synopſ. of Quad. p.* 212.

In Latin, *Hermellanus, animal Ermineum*; in Italian, *Armellino*; in German, *Hermelin*; in Swediſh, *Hermelin, Lekatt*; in Poliſh, *Gronoſtay*; in French, *L'Hermine*, or *Le Roſelet*; in Engliſh, *Ermine, Stoat*.

Muſtela alba; *Geſner, Quad. p.* 753.

Muſtela candida, ſive animal ermineum recentiorum; *Ray, Synopſ. Quad. p.* 198.

Muſtela erminea, plantis fiſſis, caudæ apice nigro; *Linn. Syſt. Nat. p.* 68.

Muſtela armellina; muſtela alba, extrema cauda nigri; *Klein. Quad. p.* 63.

Muſtela hieme alba, æſtate ſupra rutila, infra alba, cauda apice nigro; *Briſſon. Regn. Animal. p.* 243.

for

for the end of their tail is always of a deep black, and the borders of the ears and toes are white.

We have little to add to what we formerly remarked concerning this animal*. We ſhall only obſerve that it changes its colour, as uſual, in winter. I had one ſent me, in the beginning of March 1757, which was then white. I kept it till April 1758, when it would probably have become white, had it been at liberty; but it was confined in an iron cage, againſt the bars of which it perpetually rubbed, and, as it had not been ſufficiently expoſed to the cold, it ſtill preſerved its ſummer coat. It remains as ſavage as ever, and has loſt nothing of its bad ſmell. In every other circumſtance, it is a healthy vivacious animal, has lively eyes, a fine countenance, and movements ſo rapid, that it is impoſſible to follow them with the eye. It has always been fed with eggs and fleſh; but it touches not meat till it has become putrid. It never inclined to eat honey; and, being deprived of victuals for three days, it died, after having taken a ſmall quantity of honey. The ſkin of this animal is very precious. The furs of the ermine are finer and fairer than thoſe of the white rabbit; but they ſoon turn yellowiſh; and, indeed, the ermines of our climate have always a ſlight tincture of yellow.

This animal is very frequent in the north, eſpecially in Ruſſia, Norway, and Lapland †, where,

* See above, article Weaſel.

† Œuvres de Regnard, tom. i. p. 178.

as in every other place, they are reddiſh in ſummer and white in winter. They feed upon ſmall animals, and particularly a ſpecies of rat, which abounds in Norway and Lapland, to be afterwards mentioned. The ermines are rare in temperate climates, and are never found in warm countries. The Cape animal, called the *ermine* by Kolbe *, and whoſe fleſh, he remarks, is wholeſome and agreeable to the palate, has no affinity to the ermine. The weaſels of Cayenne, deſcribed by M. Barrere †, and the gray ermines of Tartary, and of the northern parts of China, mentioned by ſome travellers ‡, are alſo animals different from our weaſels and ermines.

SUPPLEMENT.

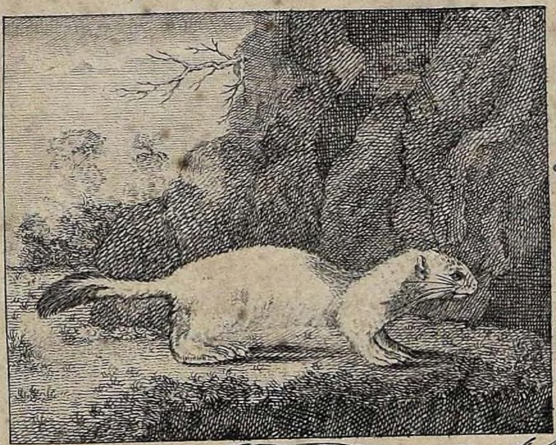
IN the natural hiſtory of Norway by Pontoppidan, we have the following remarks:

'In Norway, the ermine lives among the fragments of rocks. This animal ſeems to belong to the weaſel tribe. His ſkin is white, except the tail, which is ſpotted with black. The furs of Norway and Lapland preſerve their whiteneſs better than thoſe of Ruſſia, which ſooner turn yellowiſh; and, for this reaſon, the former are of greater requeſt, even at Peterſburg. The ermine catches mice like the cat, and,

* Deſcript. du Cap de Bonne-Eſperance, p. 54.
† Deſcript. de la France Equinoctiale.
‡ Hiſt. Gen. des Voyages, tom. vi. p. 565—603.

Plate LXXX.

WEASEL.



A. Bell sculpt.

ERMINE.

Plate LXXXI.

A Bell Sculp.t

GRISON.

'when practicable, carries off his prey. He is 'particularly fond of eggs, and, when the fea is 'calm, he fwims over to the iflands which lie near 'the coaft of Norway, where there are vaft 'quantities of fea fowls. It is alledged, that, 'when the female brings forth on an ifland, fhe 'conducts her young to the continent, upon a 'piece of wood, piloting them with her fnout. 'This animal, though fmall, kills thofe of a 'much larger fize, as the rain-deer and bear. 'He jumps into one of their ears when they 'are afleep, and adheres fo faft by his teeth, 'that the creatures cannot difengage him. He 'likewife furprifes eagles and heath-cocks, by 'fixing on them, and never quitting them, even 'when they mount in the air, till the lofs of 'blood makes them fall down.'

The GRISON, or GRAY WEASEL *.

THIS animal is analogous to the weaſel and ermine. M. Allamand gave the firſt deſcription and figure of it under the name of the *griſon*, in the 15th volume of the Dutch edition of my work, which he deſcribes in the following manner:

'I received,' ſays he, 'from Surinam, the ' ſmall animal repreſented in the plate †. In the ' catalogue it was called the *gray weaſel*, from ' which circumſtance I derived the name *griſon*, ' becauſe I know not how it is denominated in ' the country where it is found. The whole up- ' per part of its body is covered with deep brown ' hair, having white points, which gives a gray- ' iſh brown colour: Under the head and neck is ' a bright gray, becauſe the hairs there are very ' ſhort, and the white part is of equal length ' with the brown. The muzzle, and the under ' part of the body and legs, are black; which ſin- ' gularly contraſts with the gray colour on the ' head and neck.

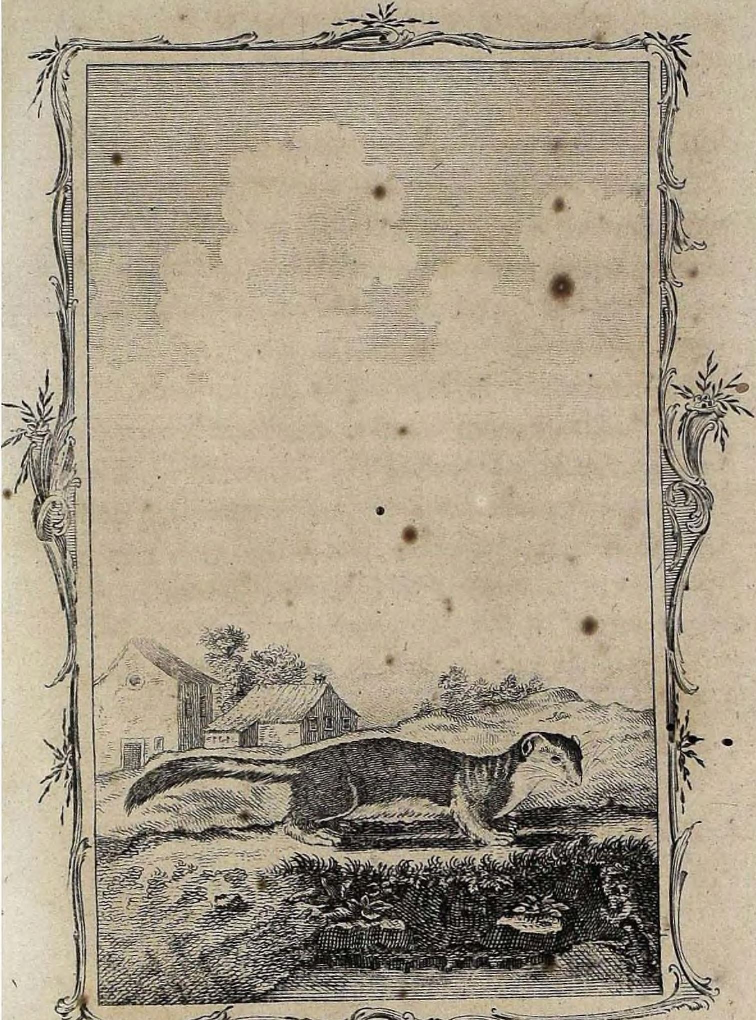
'The head of this animal is very large in pro- ' portion to its body; its ears form almoſt a ſemi- ' circle; its eyes are large; and its mouth is

* A new animal from Buffon's Supplement.

† Edition de Hollande, tom. xv.

' armed

Plate LXXXII.



A. Bell Sculp.t

ROSELET.

'armed with ſtrong grinders, and ſharp tuſks. 'It has ſix cutting teeth in each jaw, four of 'them hardly riſing above the gums. Both 'the fore and hind feet have five toes, with yel- 'lowiſh claws. The tail is pretty long, and ter- 'minates in a point.

'The griſon has a greater reſemblance to the 'weaſel than to any other animal. But it be- 'longs not to the weaſel tribe; for its body is 'too ſhort, and its legs are too long. It is not 'mentioned by any author or traveller. I 'ſhewed it to ſeveral perſons who had lived 'long in Surinam; but none of them knew it; 'hence it either muſt be a rare animal, even in 'its native country, or it muſt live only in de- 'ſert and unfrequented places. The length of 'its body is about ſeven inches. I have not 'been able to learn any thing of its hiſtory.'

THE SQUIRREL*.

THE ſquirrel is a little neat animal, and may be conſidered as in a ſtate between ſavage and domeſtic. The gentleneſs, docility, and inoffenſiveneſs of his manners, entitle him to regard and protection. Though he ſometimes ſeizes birds, he is neither carnivorous nor deſtructive. Fruits, almonds, nuts, beech maſt, and acorns, are his common food. He is handſome, lively, alert, and extremely vigilant and induſtrious. He has eyes full of fire, a fine countenance, a nervous body, and very nimble limbs. The beauty of his figure is heightened by a tail

* The common ſquirrel has two cutting teeth in each jaw; four toes before, and five behind; a long tail, cloathed with long hair; the ears terminated in long tufts of hair; the eyes are large, lively, and black; the head, body, legs, and tail, are of a bright reddiſh brown; the breaſt and belly are white; and the hair on each ſide of the tail lies flat; *Pennant's Synopſ. of Quad. p.* 279.

In Greek and Latin, *Sciurus*; in Italian, *Schirivolo, Chirivolo, Schirato, Schiratola*; in Spaniſh, *Harda-eſquilo*; in German, *Eychorn, Eichhermlin*; in Swediſh, *Ikhorn*; in Poliſh, *Wijervijorka*; in French, *L'Ecureuil.*

Sciurius; *Geſner. Hiſt. of Quad. p.* 845.

Sciurus vulgaris; *Ray, Synopſ. Quad.* p. 214.

Sciurus vulgaris, auriculis apice barbatis, palmis tetradactylis, plantis pentadactylis; *Linn. Syſt. p.* 104.

Sciurus vulgaris rubicundus; *Klein. Quad. p.* 53.

Sciurus rufus quandoque griſeo admixto; *Briſſon. Regn. Anim. p.* 150.

resembling

refembling a plume of feathers, which he raifes the length of his head, and under which he fhades himfelf from the fun and weather. The under part of his body is furnifhed with an apparatus equally remarkable, and which indicates ftrong generative powers. The fquirrel partakes lefs of the nature of quadrupeds than moft others of that tribe. He generally refts almoft on end, and ufes his fore-feet like hands, in carrying his food to his mouth. Inftead of concealing himfelf under the earth, he is perpetually in the air. He approaches the birds by his lightnefs; and, like the feathered tribes, he dwells on the tops of trees, and traverfes the forefts by leaping from one tree to another. He likewife builds his neft in the trees, gathers grains and feeds, drinks the dews, and defcends not to the earth but when the trees are agitated by ftorms. He is never found in the open fields, nor in the plains. He approaches not the habitations of men, and never remains among brufhwood; but delights in the lofty trees of the foreft. Of water he is ftill more afraid than of the earth; and we are affured, that, when he wants to pafs a river or lake, he employs the bark of a tree for a fhip, and ufes his tail for the rudder and fails *.

He

* Rei veritate nititur quod Gefnerus ex Vicentio Beluancenfi et Olao Magno refert, fciuros, quando aquam tranfire cupiunt, lignum leviffimum aquæ imponere; eique infidentes, et cauda, non tamen ut vult, erecta, fed continuo mota, velificantes neque flante vento, fed tranquillo æquore tranfvehi, quod

He ſleeps not, like the dormouſe, during the winter, but is at all ſeaſons awake and lively; and, if the foot of the tree where he repoſes be touched, he inſtantly leaves his little neſt, and flies to another tree, or ſhelters himſelf under a branch. He collects nuts during ſummer, hides them in the trunks or hollows of old trees, and has recourſe to them for his winter food: He likewiſe ſearches for them in the ſnow, and ſcratches off the ſurface of it with his feet. His voice is ſhrill, and ſtill more piercing than that of the martin. When irritated, he makes a murmuring or grumbling noiſe. He is too light for walking; his movements conſiſt of little leaps; and ſometimes he makes conſiderable bounds. His claws are ſo ſharp, and his motions ſo quick, that he inſtantaneouſly climbs beech trees, though their bark be exceedingly ſmooth.

During the fine ſummer nights, the ſquirrels are heard crying, when purſuing each other among the trees. They ſeem to dread the heat of the ſun; for, during the day, they remain in their neſts, from which they iſſue, in the night, to eat, to frolick, and to make love. Their habitation is clean, warm, impenetrable to rain, and generally ſituated in the cleft of a tree. They begin the work by carrying ſmall ſticks,

quod fide dignus, fidusque meus emiſſarius ad inſulas Gothlandiæ, plus ſimplice vice obſervavit, et cum ſpoliis in littoribus ibidem collectis redux mirabundus mihi retulit; *Diſſert. de Sciuro volante. Phil. Tranſ.* No. 97. *pag.* 38. *Klein. de Quad. p.* 53.

which

which they mix and interlace with moſs: They then preſs and ſtamp it, to give it firmneſs and capacity for holding themſelves and their young. A ſmall ſtrait aperture only is left near the top, which is hardly ſufficient to allow them to paſs. Above this aperture is a conical cover which ſhelters the whole, and makes the rain run off the ſides. They generally produce three or four at a litter: The females come in ſeaſon in the ſpring, and bring forth in May, or the beginning of June. They caſt their hair in winter, and the new fur is redder than the former. They comb and dreſs themſelves with their hands and teeth, are very cleanly, and have no bad ſmell. Their fleſh makes pretty good eating. The hair of their tail is uſed for pencils; but their ſkin is only an indifferent fur.

Several ſpecies of quadrupeds border upon that of the ſquirrel; but there are few varieties in the ſpecies itſelf. Some are of an aſh-colour; but the greateſt number are reddiſh. The ſmall gray kind is a different ſpecies, and continues always gray: And, without mentioning the flying ſquirrels, the white ſquirrel of Cambaia *, which is very ſmall, that of Madagaſcar †, called *tſitſihi*, which is gray, and neither beautiful nor eaſily tamed, the white ſquirrel of Siam ‡, the gray ſpotted ſquirrel of Bengal §, the ſtriped

* Les Voyages de Pietro della Valle, tom. vi. p. 368.

† Le Voyage de Flacourt, p. 164.

‡ Le ſecond Voyage du P. Tachard, p. 249.

§ Voyages de la Comp. des Indes de Hollande, tom. vii.

ſquirrel

ſquirrel of Canada *, the black ſquirrel †, the large gray ſquirrel of Virginia ‡, the ſquirrel of New Spain, with white ſtripes §, the white ſquirrel of Siberia ‖, the variegated ſquirrel, or *mus ponticus*, the ſmall American ſquirrel, that of Braſil, that of Barbary, the palm-rat, &c. form ſo many diſtinct and independent ſpecies of quadrupeds.

SUPPLEMENT.

SQUIRRELS ſhould be conſidered rather as natives of northern regions, than of temperate climates; for they abound ſo much in Siberia, that immenſe numbers of their ſkins are annually ſold in that country. The Siberians, ſays M. Gmelin, take the ſquirrels in traps, made nearly in the form of a fourth figure, which are ſuſpended on the trees, and baited with a piece of dried fiſh ¶.

It was formerly remarked, that there are black ſquirrels in America. M. Aubry, curate of Saint Louis, has, in his cabinet, a ſquirrel, ſent him from Martinico, which is totally black. It is alſo diſtin-

* Le Voyage de Sagard Theodat, p. 305.
† L'Hiſt. Nat. de la Caroline, par Cateſby, tom. ii. p. 73.
‡ Ibid. tom. ii. p. 76.
§ Albert Seba, vol. i. p. 76.
‖ Briſſon. Regn. Anim. p. 151.
¶ Voyage de M. Gmelin in Siberie, tom. ii. p. 232.

diſtinguiſhed from other ſquirrels by having no hair, or at leaſt a very ſmall quantity, on its ears.

M. de la Borde, King's phyſician at Cayenne, remarks, that, in Guiana, there is only one ſpecies of ſquirrel, which lives in the woods; that its hair is reddiſh; that it exceeds not the ſize of an European rat; that it feeds on the grain of the *Maripa*, *Aoura*, *Comana*, &c.; that it brings forth its young, to the number of two, in the holes of trees; that it bites like a rat; that it is eaſily tamed; that it makes a kind of low whiſtling cry; and that it is always ſeen alone, leaping from branch to branch.

I am not certain that this animal, mentioned by M. de la Borde, is a real ſquirrel; for theſe animals, in general, are not found in very warm climates, ſuch as that of Guiana. The ſpecies, on the contrary, is very numerous in the cold and temperate regions of both Continents.

'We find,' ſays M. Kalm, 'ſeveral ſpecies of 'ſquirrels in Pennſylvania, where the ſmall kind, 'called the *ground-ſquirrel*, is preferred; be'cauſe, though difficult to tame, it is moſt hand'ſome. The large ſquirrels do much miſchief 'to the plantations of maize. They cut the 'ſtems in order to eat the pith. They ſome'times come in hundreds into a field, and often 'devour the whole wheat in a ſingle night. In 'order to deſtroy them, a price is put upon their 'heads. The inhabitants eat the fleſh of the

'squirrels, but put little value on their skins*.
'The gray squirrels are common in Pennsylvania,
'and in several other parts of North America.
'In figure they resemble those of Sweden; but,
'both in summer and winter, they preserve their
'gray colour, and are likewise somewhat larger.
'They build their nests with moss and straw in
'the hollows of trees. They feed upon the
'fruits of the woods, but prefer the maize. They
'lay up provisions for winter, and remain in
'their magazines during the great colds. These
'animals not only do much injury to the maize,
'but likewise to the oaks, the flowers of which
'they devour, so that the trees produce few
'acorns. . . . . It is alledged, that they are
'now more numerous in Pennsylvania than for-
'merly, and that they have multiplied in pro-
'portion to the increase of the plantations of
'maize, which is their principal food.'

* Voyage de Kalm, tom. ii. p. 245.

Plate LXXXIII.

SQUIRREL.

THE RAT*.

NATURE, by descending gradually from great to small, from strong to weak, counterbalances every part of her works. Attentive solely to the preservation of each species, she creates a profusion of individuals, and supports by numbers the small and the feeble, whom she hath left unprovided with arms or with courage. She has not only put those inferior animals in a condition to perpetuate and resist by their own numbers, but she seems, at the same time, to have afforded a supply to each by multiplying the neighbouring species. The rat, the mouse, the field mouse, the water-rat, the short tailed

* The rat has two cutting teeth in each jaw, four toes before, five behind, and a slender taper tail, naked or very slightly haired. It is of a deep iron gray colour, nearly black; the belly is cineritious, and the legs dusky and almost naked. There is a claw, in place of a fifth toe, on the fore-feet. Its length is seven inches, and that of the tail near eight; *Pennant's Synops. of Quad. p.* 299.

In Greek, Μυς; in Latin, *Mus major, Rattus*; in Italian, *Rato di casa*; in Spanish, *Raton*; in German, *Ratz*; in Swedish, *Rotta*; in Polish, *Sczvrez*; in French, *Le Rat*.

Mus domesticus major, sive rattus; *Gesner. Quad. p.* 731. *Ray, Synops. Quad. p.* 217.

Mus rattus, cauda elongata subnuda, palmis tetradactylis, cum unguiculo pollicari, plantis pentadactylis; *Linn. Syst. p.* 83.

Mus rattus domesticus; *Klein. Quad. p.* 75.

Mus cauda longissima, obscure cinereus: *Brisson. Regn. Anim. p.* 168.

field-mouſe, the fat ſquirrel, the garden ſquirrel, the dormouſe, the ſhrew-mouſe, and ſeveral others which I mention not, becauſe they do not belong to our climate, form ſo many diſtinct and ſeparate ſpecies, but ſo analogous to each other, that, if any one ſhould happen to fail, the gap in the genus would hardly be perceptible. It is this great number of neighbouring ſpecies which hath given to naturaliſts the idea of genera; an idea which can only be employed when we view objects in general, but which vaniſhes whenever we conſider Nature in detail.

Men at firſt gave diſtinct names to objects which appeared to differ from each other; and, at the ſame time, they gave general denominations to objects that ſeemed to be nearly ſimilar. Among a rude people, and in the infancy of all languages, there is hardly any thing but general terms, or vague and ill-formed expreſſions for objects of the ſame order, though very different from each other. An oak, a beech, a linden-tree, a fir, a pine, a yew, would, at firſt, have no other name but that of a *tree*; afterwards the oak, the beech, and the yew, would all be called *oak*; when theſe were diſtinguiſhed from the fir, the pine, and the yew, the three latter would be called *fir*. Particular names could only be invented in conſequence of a minute examination of each different ſpecies; and the numbers of theſe names are augmented in proportion to the extent of our knowledge of Nature: The more

we

we examine her, proper and particular names will become more frequent. When natural objects, therefore, are repreſented to us, under general denominations, or by claſſes and genera, it is recalling the darkneſs peculiar to the infant ſtate of human knowledge. Ignorance is the parent of genera; but ſcience will for ever continue to create and to multiply proper names; and I ſhall never heſitate in adding to their number, as often as I have occaſion to delineate different ſpecies.

Several ſpecies of ſmall animals have been confounded under the generic name of *rat*: But we ſhall confine this name ſolely to the common rat, which is of a blackiſh colour, and infeſts the habitations of men. The rat commonly frequents granaries and barns, and from thence, when food is ſcarce, comes into our houſes. He is a carnivorous, or rather an omnivorous animal: He ſeems only to prefer hard ſubſtances to thoſe which are tender or ſucculent. He gnaws linen, cloths, furniture, makes holes in the walls, lodges in the ceilings, and in the void ſpaces between the wall and the wainſcotting. From theſe lurking places the rats iſſue in queſt of food, and tranſport thither every ſubſtance they can drag, forming conſiderable magazines, eſpecially when they have young to provide for. The female brings forth ſeveral times a-year, but always in the ſummer ſeaſon. The litter generally conſiſts of five or ſix. They

are fond of warmth, and, in winter, inſinuate themſelves near the chimneys, or lodge among hay or ſtraw: In ſpite of cats, poiſon, and ſnares, theſe animals multiply ſo greatly, that they often do much damage. In old country-houſes where grain is kept, and where the vicinity of barns and magazines of hay facilitates their retreat, they often increaſe ſo prodigiouſly, that the poſſeſſors are obliged to remove and deſert their habitations, unleſs the rats happen to deſtroy each other. It is well known, that rats, when pinched for food, eat one another. When a famine is created by too great a number being crowded into one place, the ſtrong kill the weak, open their heads, and firſt eat the brain, and then the reſt of the body. Next day, the war is renewed, and continues in the ſame manner till moſt of them are deſtroyed. This is the reaſon why theſe animals, after being extremely troubleſome, diſappear all of a ſudden, and return not for a long time. The ſame thing happens to field-mice, whoſe prodigious multiplication is interrupted only by the hoſtilities they exerciſe on each other, when proviſions become ſcarce. This ſudden deſtruction is aſcribed by Ariſtotle to the operation of rains. But rats are not expoſed to rain, and the field-mice know how to guard themſelves againſt its effects; for the holes they inhabit are not even moiſt.

The rats are as laſcivious as they are voracious: They ſqueak during their amours, and cry when

when they fight. They prepare a bed for their young, and ſoon learn them to eat. When the young begin to iſſue from their hole, the mother watches, defends, and even fights with the cats in order to ſave them. A large rat is more miſchievous, and nearly as ſtrong, as a young cat. The fore-teeth of the rat are long and ſtrong: The cat is not a good biter; and, as ſhe uſes her claws only, ſhe requires to be both vigorous and accuſtomed to fight. The weaſel, though ſmaller, is a more dangerous and formidable enemy, becauſe he follows the rat into his hole. Their ſtrength being nearly equal, the combat often continues long: But the method of uſing their arms is very different. The rat wounds only by reiterated ſtrokes with his fore-teeth, which are rather deſtined for gnawing than biting; and, being ſituated at the extremity of the lever or jaw, they have not much force. But the weaſel bites cruelly with the whole jaw, and, inſtead of quitting his hold, he ſucks the blood from the wounded part; and, therefore, the rat uniformly falls a ſacrifice to the weaſel.

Of this ſpecies, as in all thoſe which conſiſt of numerous individuals, there are many varieties. Beſide the common rat, which is blackiſh, ſome are brown, others gray, reddiſh, and even totally white. The white rats have red eyes, like the white rabbit, the white mouſe, and all the other animals which are perfectly white. The whole ſpecies, and its varieties, appear to be natives of

temperate climates, and are more diffuſed over the warm than the cold regions. There were no rats originally in America *; but thoſe imported from Europe multiplied ſo prodigiouſly, that they were long the ſcourge of the colonies, where they had no enemies but large ſerpents, which ſwallowed the rats alive. They have been carried by ſhips into the Eaſt Indies, and all the iſlands of the Indian Archipelago †; and are found likewiſe in Africa ‡. But, towards the north, they have never multiplied beyond Sweden; for what are called Norwegian and Lapland rats, are animals of a different ſpecies.

SUPPLEMENT.

PONTOPPIDAN remarks, 'that neither the 'wood nor water rats can live farther north than 'Norway; that there are ſeveral diſtricts, as that 'of Hordenver in the dioceſe of Bergen, and others 'in the dioceſe of Aggerhum, where no rats are 'to be found; and that the rats on the ſouth 'banks of the river Vormen ſoon periſh when

* See la Deſcript. des Antilles, par le P. du Tertre, tom. ii. p. 303. L'Hiſt. Nat. des Antilles, p. 261. Nouveaux Voyages aux Iles de l'Amerique, tom. iii. p. 160. Dampier, tom. iv. p. 225.

† Lettres Edifiantes, Recueil xviii. p. 161.

‡ Voyage de Guinée par Boſman, p. 241. L'Hiſt. Gen. des Voyages par M. l'Abbé Prevôt, tom. iv. p. 238.

'carried

'carried to the north ſide of it. This difference,' he adds, 'can only be aſcribed to certain exhala-'tions of the ſoil, which are deſtructive to theſe 'animals.' Theſe facts may be true: But we have often diſcovered that Pontoppidan is an author who deſerves not entire credit.

M. le Vicomte Querhöent has favoured me with the following remarks: That the rats, tranſported from Europe to the Iſle of France, increaſed to ſuch a degree, that, it is alledged, they made the Dutch leave the iſland. The French have diminiſhed the number, though great quantities of them ſtill remain. Some time, adds M. de Querhöent, after a rat reſides in India, he acquires ſo ſtrong a ſmell of muſk that he ſcents every thing for a conſiderable ſpace round his habitation; and it is alledged, that, when he comes near wine, he makes it turn ſour.—This Indian rat appears to be the ſame which the Portugueſe call *cheroſo*, or odoriferous rat. La Boullaye-le-Goux ſays, 'that it is very ſmall, and nearly of 'the figure of the ferret; that its bite is venom-'ous; that its ſmell is immediately perceived 'when it enters a chamber; and that it cries '*kric*, *kric*, *kric* *.'

This rat is likewiſe found in Madura, where it is called the *ſcented rat*. It is mentioned by the Dutch voyagers, who tell us, that its ſkin is as fine as that of the mole, but not ſo black †.

* Voyage de la Boullaye-le-Gouz, p. 256.

† Recueil des Voyages qui ont ſervi à l'Etabliſſement de la Comp. des Indes Orient. tom. ii. p. 275.

THE MOUSE*.

THE mouſe is much ſmaller, equally numerous, and more generally diffuſed than the rat. It has the ſame inſtinct, the ſame conſtitution and natural diſpoſitions, and differs only by its weakneſs, and the habits which reſult from this circumſtance. Timid by nature, and familiar from neceſſity, fear and want are the ſources of all his movements. He never iſſues from his hole but in queſt of food, and runs in again upon the ſmalleſt alarm. He goes not, like the rat, from houſe to houſe, unleſs he be forced; and he is not near ſo deſtructive. His manners are gentle, and he may be tamed to a certain degree; but he

* An animal that needs no deſcription; when found white, it is very beautiful, the full bright eye appearing to great advantage amidſt the ſnowy fur; *Pennant's Synopſ. of Quad. p.* 302.

In Greek, Μυσκος; in Latin, *Mus*, *Muſculus*, *Sorex*; in Italian, *Topo*, *Sorice*, *Sorgio di caſa*; in Spaniſh, *Rat*; in German, *Muſz*; in Swediſh, *Mus*; in Poliſh, *Myſſ*; in French, *La Souris*.

Mus domeſticus communis, vel minor; *Geſner. Icon. Animal. Quad. p.* 114.

Mus domeſticus vulgaris, ſeu minor; *Ray. Synopſ. Animal. Quad. p.* 218.

Mus muſculus, cauda elongata, palmis tetradactylis, plantis pentadactylis; *Linn. Syſt. p.* 83.

Mus minor, muſculus vulgaris domeſticus, cauda tereti longa; *Klein. Hiſt. Nat. Quad. p.* 57.

Mus cauda longiſſima, obſcure cinereus, ventre ſubalbacente; *Briſſon, Regn. Anim. p.* 169.

never

never diſcovers the ſmalleſt attachment to his benefactors. It is not, indeed, eaſy to love thoſe who are perpetually laying ſnares for us. Though weak, the mouſe has many enemies, from whom he has no means of eſcape, but thoſe of agility and minuteneſs. Owls, birds of prey, cats, weaſels, and even rats, make war upon the mice. They are ſhot, caught in traps, and deſtroyed by millions. In a word they ſubſiſt by their amazing fecundity alone.

They bring forth at all ſeaſons, and ſeveral times in the year. The litter generally conſiſts of five or ſix. In leſs than fifteen days the young are ſtrong enough to diſperſe and to procure food for themſelves. The duration of life in thoſe ſmall animals muſt, therefore, be ſhort, ſince their growth is ſo rapid; and this circumſtance ſtill farther augments the idea of their prodigious multiplication. Ariſtotle tells us, that, having ſhut up a pregnant mouſe in a veſſel, along with plenty of grain, he, in a ſhort time after, found 120 mice, all ſprung from the ſame mother.

Theſe little animals are by no means ugly; they have a vivacious and elegant air. That ſpecies of horror which ſome people feel at them, ariſes from the ſurpriſe and inconveniencies they ſometimes occaſion. All mice are whitiſh under the belly, and ſome are altogether white. Others are more or leſs brown and black. The ſpecies is generally diffuſed over Europe, Aſia, and Africa;

and,

and, it is alledged, that thoſe of America, where they are very numerous, came originally from the Old Continent. It is, however, certain, that this little animal follows man, and flies from uninhabited places, probably on account of its natural appetite for bread, cheeſe, butter, oil, and other aliments which men prepare for themſelves.

SUPPLEMENT.

WHITE mice, with red eyes, are found not only in our temperate climates, but in the ſouthern and northern regions of both Continents. 'White mice, with red eyes,' ſays Pontoppidan, 'have been found in the ſmall village of Ramſdallem; but, whether they are indigenous, or 'brought from the Eaſt-Indies, is uncertain.' This laſt ſuppoſition ſeems to have no foundation; for it is natural to expect white mice in Norway, as well as every where elſe in Europe; and mice, in general, are equally numerous in America as in the Old Continent.

The Long-tailed FIELD-MOUSE *.

THIS animal is leſs than the rat, and larger than the mouſe. It never lives in houſes, but is found in the fields and woods. Its eyes are remarkably large and prominent; and it differs ſtill more from the rat and mouſe, by the colour of its hair, which is whitiſh under the belly, and of a reddiſh brown on the back. It is very generally and copiouſly diffuſed, eſpecially in elevated countries. It ſeems to take a conſiderable time in arriving at full growth, becauſe it varies greatly in ſize. The largeſt are between four and five inches long; and the ſmaller ones, which appear likewiſe to be adults, are an inch ſhorter. And, as we find them of all intermediate ſizes, both the

* This animal has full black eyes; its head, back, and ſides are of a yellowiſh brown, mixed with ſome duſky hairs; the breaſt is of an ochre colour; and the belly is white: Its length, from the tip of the noſe to the tail, is four inches and a half, and that of the tail, which is ſlightly covered with hair, is four inches; *Pennant's Synopſ. of Quad. p.* 302.

Mus agreſtis major, macrouros Geſneri; *Ray, Synopſ. Quad. p.* 219.

Mus cauda longa, ſupra e fuſco flaveſcens, infra ex albo cineraſcens; *Briſſon. Quad. p.* 123.

Mus domeſticus medius; *Ray, Synopſ. Quad. p.* 218.

Mus ſylvaticus, cauda longa, palmis tetradactylis, plantis pentadactylis, corpore griſeo pilis nigris, abdomine albo; *Linn. Syſt. Nat. p.* 84.

Le Mulot; *Buffon.*

great

great and ſmall are unqueſtionably the ſame ſpecies. Ignorance of this fact has, probably, led ſome naturaliſts to make two ſpecies of them, the one called *the great field-rat*, and the other *the field-mouſe*. Ray, who firſt fell into this blunder, ſeems to acknowledge that he knew but one ſpecies*. And though the ſhort deſcriptions he has given of each ſpecies appear to differ, we ought not to conclude that both exiſt: 1. Becauſe he himſelf knew but one. 2. Becauſe, after all the reſearches I have made, I have not been able to diſcover more than one kind; becauſe Geſner, and other naturaliſts, mention one ſpecies only, under the name of *mus agreſtis major*, which they ſay is very common; and becauſe Ray ſays that the other kind, called *mus domeſticus medius*, is alſo very common: Hence, it is apparent, that none of theſe authors have ever ſeen both kinds, ſince they acknowledge both to be very common. 3. Becauſe in this ſingle ſpecies, individuals are found of a larger and leſſer ſize, this circumſtance might lead them to conſider the ſmall as of one ſpecies, and the larger of another. Laſtly, becauſe the deſcriptions are too vague and inaccurate to eſtabliſh a ſpecific difference.

The ancients, indeed, mention two ſpecies, the one under the denomination of *mus agreſtis major*, the other under that of *mus agreſtis minor*. Theſe two ſpecies are very common, and we know

* De hac ſpecie mihi non undequaque ſatisfactum eſt; *Ray, Synopſ. Quad. p.* 219.

them

them as well as the ancients: The firſt is our long-tailed field-mouſe: The ſecond is not the *mus domeſticus medius* of Ray, but another animal, known by the name of the *ſhort-tailed field-mouſe*, or *little field-rat*. And, as it differs both from the rat and the long-tailed field-mouſe, I have given it its Italian name, *compagnoli* or *compagnol*.

The long-tailed field-mouſe, as I formerly remarked, lives in dry and elevated grounds. In the woods and adjacent fields they are found in vaſt numbers. They retire into holes among the bruſhwood and under the trunks of trees, where they amaſs great quantities of acorns, nuts, and beech-maſt; ſometimes a whole buſhel is found in a ſingle hole; and this hoard is not proportioned to the wants of the animal, but to the capacity of the place where it is depoſited. Theſe holes are generally more than a foot under ground, and often divided into two apartments, the one for living in along with their young, and the other for a magazine. I have frequently ſeen great damage done to the plantations by theſe animals. They carry off the new ſown acorns; by following the furrow of the plough, they dig up one after another, not leaving a ſingle ſeed. This happens chiefly in thoſe ſeaſons when the acorns are ſcarce: Not finding enough in the woods, they come in queſt of them in the cultivated fields, and do not eat them on the ſpot, but tranſport them to their holes, where they amaſs ſuch quantities,

tities, that they often corrupt. Theſe creatures alone do more miſchief in a nurſery of trees than all the birds and other animals put together. The only way to prevent this damage is, to lay traps at ten paces aſunder through the extent of the ſown ground. No other apparatus is neceſſary than a roaſted walnut placed under a flat ſtone, ſupported by a ſtick. The animals come to eat the walnut, which they prefer to acorns; and, as the walnut is fixed to the ſtick, whenever they touch it, the ſtone falls and cruſhes them to death. I have uſed the ſame expedient for the deſtruction of the ſhort-tailed field-mouſe, which likewiſe deſtroys acorns. When I began this operation, I deſired all the mice that were caught by the traps to be brought to me, and found, with aſtoniſhment, that above 100 were taken each day, from a piece of ground conſiſting only of about 40 French arpents. From the 15th of November to the 8th of December, above 2000 were ſlain in this manner. Their numbers gradually decreaſed till the froſt became ſevere, when they retire to their holes, and feed upon the magazines they have collected. It is more than 20 years ſince I made this trial, which I always repeated when I ſowed tree-ſeeds, and never failed to catch vaſt quantities of theſe mice. They abound chiefly in autumn; their numbers being much leſs in the ſpring: For, if proviſions fail during the winter, the ſtrong devour the weak. The long-tailed field mice likewiſe eat the ſhort-tailed ſpecies, and

even thrushes, blackbirds, and other birds which they find entangled in snares. They first eat the brain, and then the rest of the body. I once kept a dozen of these mice in a cage, and furnished them with food every morning at eight o'clock. One day they were neglected for about a quarter of an hour, when one of their number was eaten up by the rest; next day another suffered the same fate; and, in a few days, one only remained: All the others had been killed, and partly devoured; and even the survivor himself had his feet and tail mutilated.

The rat is very prolific; but the long-tailed field-mouse is more so. The latter brings forth more than once a-year, and the litters often consist of nine or ten, while those of the rat never exceed five or six. In one hole I have found two mothers and twenty young. This animal is very generally diffused over Europe. It is found in Sweden, and is called by Linnæus* *mus cauda longa, corpore nigro flavescente, abdomine albo.* It is very common in France, Italy, and Switzerland: Gesner calls it *mus agrestis major* †. The species is also numerous in Germany and in Britain, where it is called the *field-mouse.* It has for enemies, wolves, foxes, weasels, birds of prey, and its own species.

* Faun. Suec. p. 11.

† Gesner, Quad. p. 793. Icon. Quad. p. 116.

THE WATER-RAT*.

THIS animal is about the ſize of a rat; but, from its manners and diſpoſitions, has a much greater reſemblance to the otter than to the common rat. Like the otter, it frequents the freſh water, and is found in the margins of rivers, brooks, and pools, and lives moſtly on fiſhes. Gudgeons, minnows, blays, and the fry of carps, pikes, and barbels, are his ordinary food.

* Rat with a thick blunt noſe; ears hid in the fur; eyes ſmall; teeth yellow: On each foot five toes; inner toe of the fore foot very ſmall; the firſt joint very flexible: Head and body covered with long hairs, black mixed with a few ferruginous hairs; belly of an iron gray; tail covered with ſhort black hairs, the tip whitiſh: Weight nine ounces; length, from noſe to tail, 7 inches; tail only 5; *Pennant's Synopſ. of Quad.* p. 301.

In Latin, *Mus aquaticus, Mus aquatilis*; in Italian, *Sorgo morgange*; in German, *Waſſer-muſz*; in Poliſh, *Myſſ wodna*; in French, *Le Rat d'eau.*

Mus aquaticus; *Geſner. Hiſt. Quad.* p. 732.

Mus aquatilis, quadrupes Bellom; *Icon.* p. 354.

Mus aquaticus major, ſive rattus aquaticus; *Ray, Synopſ. Quad.* p. 317.

Mus amphibius, cauda elongata piloſa, plantis palmatis; *Linn. Syſt. Nat.* p. 82.

Mus rattus aquatilis; *Klein. Quad.* p. 57.

Mus cauda longa, pilis, ſupra ex nigro et flaveſcente mixtis, infra cinereis veſtitus. Mus aquaticus; *Briſſon. Regn. Anim.* p. 175.

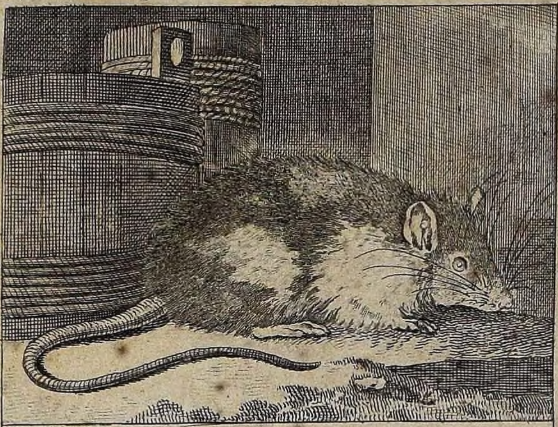
He

He likewife eats frogs, water infects, and fometimes the roots of plants. He has not, like the otter, membranes between his toes. This error has been copied from Willoughby by Ray and other naturalifts. Though all his toes be feparate, he fwims with eafe, keeps long under the water, and carries off his prey to be devoured upon the grafs, or in his hole. He is fometimes furprifed by fifhers when fearching for craw-fifh; and he endeavours to efcape by biting their fingers, or leaping into the water. His head is fhorter, his muzzle thicker, his hair more bufhy, and his tail much fhorter, than thofe of the rat. Like the otter, he avoids large rivers, or rather thofe which are much frequented. He never vifits houfes or barns, but keeps upon the margins of waters, from which he wanders not upon dry land fo far as the otter, which is fometimes found at the diftance of a league from water. Water-rats are feldom met with in elevated places, or in dry plains, but are extremely numerous in moift and marfhy valleys. The females come in feafon about the end of winter, and bring forth in the month of April, the litter generally confifting of fix or feven. Perhaps they bring forth more than once a year; but of this we have no proper knowledge. Their flefh is not intolerably bad, being eaten by the peafants, as well as that of the otter, during the feafon of Lent. They are found every where over

Europe,

Europe, except in the polar regions. If we may credit Bellon, they inhabit the banks of the Nile: However, the figure he gives of them has ſo little reſemblance to our water-rat, that it is probable the Nile rats form a different ſpecies of animals.

Plate LXXXIV.



RAT.

A Bell Sculp^t.

MOUSE.

Plate LXXXV.

LONG TAILD FIELD MOUSE.

WATER RAT.

The Short-tailed FIELD-MOUSE *.

THE ſhort-tailed field-mouſe is ſtill more common and more generally diffuſed than the long-tailed kind. The latter never appears in high grounds; but the former is found every where, in the woods, the fields, the meadows, and even in the gardens. It is remarkable for the thickneſs of its head, and the ſhortneſs of its tail, which exceeds not an inch in length. It digs holes in the earth, where it amaſſes grain, filberts, and acorns: But it appears to prefer corn to every other food. In the month of July, when the grain is ripe, the ſhort-tailed field-mice aſſemble from all quarters, and often do great da-

* This animal has a large head, a blunt noſe, ſhort ears hid in the fur, prominent eyes, and a ſhort tail: The colour of the head and upper part of the body is ferruginous, mixed with black, and the belly is of a deep aſh-colour. The length of the body, from tail to noſe, 6 inches, and that of the tail, which is thinly covered with hair, and terminated by a ſmall tuft, one inch and a half; *Pennant's Synopſ. of Quad. p.* 305.

Mus agreſtis minor; *Geſner. Quad. p.* 733. *Icon. Quad. p.* 116.

Mus agreſtis capite grandi, Brachiuros; *Ray, Synopſ. Quad. p.* 218.

Mus terreſtris, cauda mediocri ſubpiloſa, palmis ſubtetradactylis, plantis pentadactylis, auriculis vellere brevioribus; *Linn. Syſt. p.* 82.

Mus agreſtis capite grandi; *Klein. Quad. p.* 57.

Mus cauda brevi, pilis e nigricante et ſordide luteo mixtis in dorſo, et ſaturate cinereis in ventre, veſtitus.—Mus campeſtris minor; *Briſſon. Regn. Anim. p.* 176.

Campagnol, Mulot à courte queu, petit rat des champs; *Buffon.*

mage by cutting the ſtalks of the corn, in order to come at the ears. They follow the reapers, and eat up all the fallen or neglected grain. When the gleanings are devoured, they flock to the new-ſown fields, and prematurely deſtroy the crop of the enſuing year. In winter, moſt of them retire into the woods, where they feed upon filberts, acorns, and the ſeeds of trees. In particular years, they appear in numbers ſo immenſe, that they would deſtroy every thing, if they continued long: But they always kill and eat one another during a ſcarcity of proviſions. They, beſides, become the prey of the long-tailed field-mouſe, the fox, the wild cat, and the weaſels.

In its internal ſtructure, this animal reſembles the water-rat more than any other; but differs from him externally by ſeveral eſſential characters: 1. By the ſize; the ſhort-tailed field-mouſe is not above three inches long; but the water-rat is ſeven inches: 2. By the dimenſions of the head and body, thoſe of the former being proportionally thicker than thoſe of the latter: 3. By the length of the tail, which, in this field-mouſe, exceeds not a third of the length of the animal's body; but the length of the tail of the water-rat is near two thirds of its body: Laſtly, By its manners and diſpoſitions: It feeds not upon fiſhes, nor goes into water, but nouriſhes itſelf with acorns, grain, and tuberous roots, ſuch as thoſe of the dandelion, &c. Their holes reſemble thoſe

of

Plate LXXXVI.

SHORT TAILD FIELD MOUSE.

of the long-tailed field-mouſe, and are often divided into two apartments; but they are neither ſo ſpacious nor ſo deep. Several of them frequently live together. When the females are about to bring forth, they make beds of herbs for their young. They produce in ſpring and ſummer, and the litter generally conſiſts of five or ſix, and ſometimes of ſeven or eight.

THE GUINEY PIG*.

THIS little animal, though a native of Brasil and of Guiney, lives and propagates in the temperate, and even in the cold climates, when protected from the inclemency of the seasons. Though Guinea-pigs multiply prodigiously in France, their numbers are never great; because the care they require is not compensated by the profits arising from them. Their skin is hardly of any value, and their flesh, though eatable, is

* The *restless cavy* has two cutting teeth in each jaw; generally four toes on the fore-feet, and three behind, short ears, and no tail, or a very short one: The upper lip is half divided; the ears are very large, broad, and rounded at the sides: The hair is erect, and not unlike that of a young pig: The colour is white, or white variegated with orange and black, in irregular blotches; *Pennant's Synops. of Quad. p.* 243.

In Brasil, it is called *Cavia Cobaya*; in German, *Indianisch Künele, Indisch Seüle, Meer-ferchel, Meer-Schwein*; in Swedish, *Merswyn*; in Polish, *Swinka Zamorska.*

Cavia Cobaya; *Pison. Hist. Nat. p.* 102.

Cuniculus Indus; *Gesner, Icon. Quad. p.* 106.

Mus, seu cuniculus Americanus et Guineensis, porcelli pilis et voce, Cavia Cobaya Brasiliensibus dictus; *Ray, Synops. Quad. p.* 223.

Mus porcellus, cauda nulla, palmis tetradactylis, plantis tridactylis; *Linn. Syst. p.* 79.

Cavia Cobaya Brasiliensibus, quibusdam mus Pharaonis, tatu pilosus, porcellus, mus Indicus; *Klein. Quad. p.* 49.

Cuniculus ecaudatus, auritus, albus aut rufus, aut ex utroque variegatus; Cuniculus Indicus; *Brisson. Regn. Anim. p.* 147.

not

not ſo good as to be much demanded; but it might be improved, by keeping them in warrens, where they would have the benefit of freſh air, and the liberty of chooſing herbs agreeable to their taſte. Thoſe kept in houſes have nearly the ſame bad taſte with warren-rabbits; and thoſe kept in gardens during ſummer have an inſipid, but leſs diſagreeable ſavour.

The temperament of theſe animals is ſo hot and premature, that they copulate five or ſix weeks after their birth. They acquire not, however, their full growth before the 8th or 9th month. But this increaſe of ſize conſiſts only of fat; for the ſolid parts are fully unfolded before the age of ſix months. The females go with young only three weeks; and I have known them bring forth at the age of two months. The firſt litter conſiſts of four or five; the ſecond of five or ſix; and the ſucceeding ones of ſeven or eight, and ſometimes of ten or twelve. The mother ſuckles her young twelve or fifteen days; ſhe baniſhes them as ſoon as ſhe receives the male, which happens, at fartheſt, three weeks after her delivery; and, if any of them perſiſt in following her, they are maltreated and ſlain by the father. Thus theſe animals produce at leaſt every two months; and, as their young bring forth in the ſame ſpace, we are aſtoniſhed at their rapid and numerous multiplication. From a ſingle couple we may have 1000 in one year. But their deſtruction is as rapid as their propagation. They

are

are killed by cold and by moiſture; they allow themſelves, without reſiſtance, to be eaten by the cats; even the mothers defend not their young from their deſtroyers; not having time to form an attachment to their young, they make no efforts to ſave them. The males are ſtill leſs ſolicitous about their offspring, and even allow themſelves to be devoured, without reſiſtance. They ſeem to have no diſtinct ſentiment, but that of love. When under the influence of this paſſion, they are ſuſceptible of anger, fight cruelly, and even kill each other in diſputing the poſſeſſion of a female. They paſs their lives in ſleeping, eating, and amours. Their ſleep is ſhort but frequent; they eat every hour, both day and night, and they indulge in mutual embraces as often as they eat. Though perpetually throwing out urine, they never drink. They feed on all kinds of herbs, but eſpecially on parſley, which they prefer to grain or to bread. They are likewiſe fond of apples and other fruits. They eat precipitantly, like the rabbit, little at a time, but very often. They make a kind of grunting noiſe, ſimilar to that of a young pig. A kind of chirping noiſe marks the time of their amours, and they raiſe a ſharp cry when they feel pain. They are extremely delicate, and ſo impatient of cold, that it is difficult to preſerve them through the winter. They muſt be kept in a dry, warm, wholeſome place. When they feel cold, they aſſemble and crowd cloſe together; and they often

Plate LXXXVII.

A Bell sculp.

GUINEY PIG.

all perifh in this fituation. By nature they are gentle and tame. They do no mifchief; but they are equally incapable of good; for they never form any attachments. Mild by conftitution, docile through weaknefs, almoft infenfible to every object, they have the appearance of living machines conftructed for the purpofes of propagation, and of reprefenting a fpecies.

THE HEDGE-HOG*.

ΠΟλλ' οἶδ' αλωπηξ, αλλ' εχῖνος εν μεγα: 'That the fox knows many things, and the hedge-hog but one important thing,' is a proverbial ſaying of the ancients †. The hedge-hog knows how to defend himſelf without fighting, and to wound without making an attack. Having little ſtrength and leſs agility for flight, he has

* This animal has five toes on each foot; and its body is covered with ſhort ſpines. Its noſe is long; the noſtrils are bordered on each ſide with a looſe flap; the ears rounded, broad, and naked; the eyes ſmall; the legs ſhort, naked, and duſky; the inner toe is ſhorteſt, and the claws are weak; the upper part of the face, the ſides, and rump, are covered with ſtrong coarſe hair of a yellowiſh and cinereous colour; the back with ſtrong ſhort ſpines of a whitiſh colour, with a bar of black through their middle: The tail is an inch long; and the length of the body, from tail to noſe, is ten inches; *Pennant's Synopſ. of Quad, p.* 316.

In Greek, εχινος; in Latin, *Echinus, Herinaceus, Erinaceus, Echinus terreſtris*; in Italian, *Erinaceo, Riccio, Aizzo*; in Spaniſh, *Erizo*; in Portugueſe, *Ourizo, Orica cachero*; in German, *Igel*; in Swediſh, *Igelkott*; in Daniſh, *Pind Swin*; in Poliſh, *Jez, Ziennay*; in Dutch, *Yſeren Vereken*; in French, *Le Heriſſon, Eurchon.*

Echinus terreſtris; *Geſner. Quad. p.* 368.

Herinaceus; *Geſner. Icon. Quad. p.* 106.

Echinus ſive Erinaceus terreſtris; *Ray, Synopſ. Quad. p.* 231.

Erinaceus Europeus, auriculis rotundatus, naribus criſtatis; *Linn. Syſt. p.* 75.

Acanthion vulgaris noſtras, Herinaceus, Echinus; *Klein. Quad. p.* 66.

Erinaceus auriculis erectis; *Briſſon. Regn. Animal. p.* 181.

† Zenodotus, Plutarchus, et alii ex Archilocho.

received from Nature a ſpinous armour, with the faculty of rolling himſelf up like a ball, and of preſenting on all ſides thoſe ſharp weapons, which repel the enemy. The more he is haraſſed, he rolls himſelf up the cloſer. His fears tend ſtill farther to defend him; for by throwing out his urine, the ſmell and humidity of which ſpreads over his whole body, he completely diſguſts the enemy. Thus moſt dogs content themſelves with barking, and never chooſe to ſeize the hedge-hog. The fox, however, accompliſhes his end by wounding the animal's feet, and making the blood run into its mouth. But the hedge-hog is proof againſt the weaſel, the martin, the polecat, the ferret, and birds of prey. From the head to the tail, both male and female are equally covered with ſpines, and the under parts of their bodies only are garniſhed with hair. But thoſe arms which are ſo uſeful to them in defending againſt enemies, become exceedingly inconvenient when they want to unite. They cannot copulate in the manner of other quadrupeds, but face to face, either on end or lying. The females come in ſeaſon in the ſpring, and bring forth in the beginning of ſummer. I have frequently had the mother and her young brought to me in the month of June. The litter generally conſiſts of three or four, and ſometimes of five. When very young, they are white, and the buds of the ſpines are only viſible through the ſkin. I tried to rear ſome of them, by putting the mother and her young in a barrel, with

plenty

plenty of provisions: But, instead of suckling, she devoured them one after another. This was not the effect of hunger; for she eat bread, meat, and fruits. One would never have imagined that an animal so slow and indolent, could be so impatient of confinement. It even possesses the same species of malevolence with that of the monkey. A hedge-hog that had slipped into the kitchen, took the meat out of a small kettle, and defiled it with his ordure. I kept males and females in a room together; but, though they lived, they never coupled. I left several of them in my gardens, where they did so little mischief, that it could hardly be perceived. They live upon fallen fruits; and dig the earth to a small depth with their noses. They eat May-bugs, beetles, grasshoppers, worms, and some roots. They are likewise fond of flesh-meat, which they devour either raw or roasted. In the country, they are frequently found in the woods, under the trunks of old trees, in the clefts of rocks, and particularly among the stones collected upon the fields and vineyards. I am uncertain whether they climb trees, as some naturalists assert *, or use their spines for transporting fruits or grapes. They seize with the mouth every thing they eat; and though they abound in our forests, they have never been discovered upon trees, but are always found in holes or under the moss. They

* Arbores ascendit, poma et pyra decutit, in istis sese volutat ut spinis hæreant; *Sperling. Zoologia*, p. 281.

stir

ſtir not during the day, but go about the whole night. They approach not the habitations of men; but, though they ſometimes appear in the meadows, they prefer dry and elevated grounds. They are taken by the hand, never fly, nor defend themſelves with their feet or their teeth; but, when touched, they roll up in the form of a ball, and will not extend themſelves, unleſs they be plunged in water. They ſleep during the winter; and, therefore, the proviſions they are ſaid to amaſs in ſummer, would be entirely uſeleſs to them. They eat little, and can live long without food. Their blood is as cold as that of thoſe other animals who ſleep during winter. Their fleſh makes not good eating; and their ſkin, of which no uſe is now made, was formerly employed for heckling hemp.

Some authors mention two ſpecies of hedge-hog, one with a ſnout like a hog, and the other with a muzzle reſembling that of a dog. But I know one ſpecies only, of which there are even no varieties in our climates. The hedge-hogs are very generally diffuſed: They are found every where in Europe, except in the cold regions of Norway, Lapland, &c. There are hedge-hogs, ſays Flacourt*, in Madagaſcar, and they are called *Sora*. The hedge-hog mentioned by Tachard † ſeems to be another animal; and the

* Voyage de Flacourt, p. 152.

† Le ſecond Voyage du P. Tachard, p. 272.

hedge-

hedge-hogs of America*, and of Siberia †, are the ſpecies which approach neareſt to that of the common kind. Laſtly, the hedge-hog of Malacca ‡ ſeems to come nearer the porcupine than the hedge-hog.

* Echinus Indicus albus; *Ray, Synopſ. Quad. p.* 232. Echinus Americanus albus; *Albert Seba, vol.* i. p. 78. Acanthion echinatus, Erinaceus Americanus albus Surinamenſis; *Klein. Quad. p.* 66.

† Erinaceus Sibericus; *Albert Seba, vol.* i. *p.* 66.

‡ Porcus aculeatus ſeu Hiſtrix Malaccenſis; *Albert Seba, vol.* i. p. 81. Acanthion aculeus longiſſimis; Hiſtrix genuina; Porcus aculeatus Malaccenſis; *Klein. Quad. p.* 66. Hiſtrix Malaccenſis; auriculis pendulis; *Linn. Syſt. p.* 75. Erinaceus auriculis pendulis; *Briſſon. Regn. Anim. p.* 183.

Plate LXXXVIII.

A Bell Sculp.t

HEDGE HOG.

THE SHREW MOUSE*.

THE ſhrew mouſe ſeems to form a link in the chain of ſmall animals, and to fill the interval between the rat and the mole, which, though they reſemble each other in ſize, differ greatly in figure, and are very diſtant ſpecies. The ſhrew is ſtill ſmaller than the mouſe, and has

* The ſhrew mouſe has two cutting teeth in each jaw, pointing forward, a long ſlender noſe, ſmall rounded ears, and five toes on each foot. The eyes are ſmall, and almoſt hid in the fur; the noſe is long and ſlender, the upper part being longeſt; the head and upper part of the body are of a browniſh red colour, and the belly of a dirty white. The length of the body, from tail to noſe, two inches and a half, and that of the tail one inch and a half; *Pennant's Synopſ. of Quad. p.* 307.

In Greek, Μυγαλη; in Latin, *Mus araneus, Mus cæcus*; in Italian, *Toporagno*; in Spaniſh, *Murganho*; in German, *Müger, Spigmus, Ziſmus, Spitzmaus, Haſelmaus*; in Swediſh, *Nabbmus*; in Poliſh, *Keret*; in Sileſia, *Biſem-mus*; among the Griſons, *Muſarring*; in Swiſs, *Mütrer*; in Savoy, *Muſet, Muſette*; in French, *La Muſaraigne, Muſerain, Muzeraigne, Muſet, Muſetre, Sery, Sri*.

Muſaraneus; *Geſner. Hiſt. Quad. p.* 747.

Mus moſchias (becauſe, when dried, it ſmells of muſk); *Geſner, Icon. Quad. p.* 116.

Muſaraneus; *Ray, Synopſ. Quad. p.* 239.

Sorax araneus, cauda mediocri, corpore ſubtus albido; *Linn. Syſt. p.* 74.

Muſaraneus, roſtro productiore: Mus venenoſus; *Klein. Quad. p.* 58.

Muſaraneus ſupra ex fuſco rufus, infra albicans; *Briſſon. Regn. Anim. p.* 178.

an affinity to the mole, by its long noſe; by its eyes, which, though larger than thoſe of the mole, are much concealed, and more minute than thoſe of the mouſe; by the number of its toes, having five on each foot; by the tail and legs, eſpecially the hind-legs, which are ſhorter than thoſe of the mouſe; by the ears; and, laſtly, by the teeth. This little animal has a ſtrong and peculiar odour, which is very diſagreeable to the cats, who purſue and kill, but never eat the ſhrews. It is probably this bad ſmell, and the reluctance of the cats, which have given riſe to the vulgar prejudice, that the bite of the ſhrew mouſe is venomous, and particularly hurtful to horſes. But the ſhrew is neither venomous, nor is it capable of biting; for the aperture of its mouth is not large enough to take in a duplicature of another animal's ſkin, which is abſolutely neceſſary to the action of biting. The diſeaſe of horſes, vulgarly aſcribed to the bite of the ſhrew mouſe, is a ſwelling or blotch, and proceeds from an internal cauſe, which has no relation to a bite. This animal, eſpecially in winter, frequents hay-lofts, ſtables, barns, and dung-hills. It feeds upon grain, inſects, and putrid fleſh. In the country, it frequents the woods, and lives upon grain. It conceals itſelf under moſs and the leaves and trunks of trees, and ſometimes in the holes abandoned by the mole, or in ſmaller holes which it digs with its muzzle and claws. The ſhrew produces an equal number of young, though not ſo

frequently,

frequently, as the mouſe. Its cry is alſo much ſharper; but it is not nearly ſo agile. It is eaſily taken; becauſe it both ſees and runs badly. The colour of the ſhrew is a mixture of brown and red; but ſome are aſh-coloured, and others nearly black, though all of them are white under the belly. They are very common in Europe; but they ſeem not to exiſt in America. The Braſilian animal mentioned by Marcgrave*, under the name of the ſhrew mouſe, which, he ſays, has two black liſts on the back, is larger, and ſeems to be a different ſpecies.

* Marcgravii Hiſt. Braſil. p. 220.

The WATER SHREW, or BLIND MOUSE*.

THE water ſhrew, though a native of this climate, was unknown to any naturaliſt till M. Daubenton † diſcovered, and gave an exact deſcription of it ‡. This animal is taken near the ſources of fountains, at the riſing and ſetting of the ſun. During the day, it lies concealed in clefts of rocks, or in holes upon the banks of rivulets. It brings forth in the ſpring, and the litter generally conſiſts of nine.

* This animal has a long ſlender noſe, very minute ears, and very ſmall eyes, hid in the fur: The colour of the head and upper part of the body is black; and of the throat, breaſt, and belly, a light aſh-colour: Beneath the tail is a triangular ſpot. It is much larger than the common ſhrew, being, from noſe to tail, three and three fourth inches long; and the length of the tail is two inches; *Pennant's Synopſ. of Quad. p.* 308.

† Mem. de l'Acad. année 1756. Mem. ſur. les Muſaraignes, par M. Daubenton.

‡ This aſſertion ſeems not to correſpond with the following remark in p. 308. of Pennant's Synopſis: 'The water ſhrew 'mouſe was long ſince known in England, but loſt till May '1768, when it was diſcovered in the fens near Reveſly abbey, 'Lincolnſhire: It burrows in the banks, near the water, and 'is called by the fen-men, *the blind mouſe*.'

Plate LXXXIX

SHREW MOUSE.

A. Bell Sculp.

WATER SHREW MOUSE.

THE MOLE*.

THE mole, though not blind, has eyes so small, and so covered, that it can have little benefit from the sense of seeing. Nature, by way of recompense, has bestowed on it a profuse

* The mole has a long nose and snout; the upper jaw much longer than the under, no external ears, fore-feet very broad, with scarce any apparent legs before, and hind-feet very small. It has very minute eyes, hid in the fur, six cutting teeth in the upper, eight in the lower jaw, and two canine in each. The fore-part of the body is thick and muscular, and the hind-part taper; the fore-feet are placed obliquely, and resemble hands, with five toes, each terminated by strong claws. The hind-feet are very small, with five toes to each. The tail is short, and the skin very tough, so as scarce to be cut through. The hair, which is short, close set, and softer than the finest velvet, is usually black, sometimes spotted with white, and sometimes quite white. The length of the body is five and three fourth inches, and that of the tail one; *Pennant's Synops. of Quad. p.* 311.

In Greek, Ασπαλαξ; in Latin, *Talpa*; in Italian, *Talpa*; in Spanish, *Topo*; in German, *Mulwerf, Maulwurf*; in Swedish, *Mullvad*; in Polish, *Kret*; in French, *La Taupe*.

Σπαλαξ Galeni.

Talpa; *Gesner, Quad. p.* 931. *Icon. Quad. p.* 116. *Ray, Synops. Quad. p.* 236.

Talpa Europæus, caudata, pedibus pentadactylis: *Linn. Syst. p.* 73.

Talpa nostras, nigra communiter; *Klein. Quad. p.* 60.

Talpa caudata, nigricans, pedibus anticis et posticis pentadactylis. Talpa vulgaris; *Brisson. Regn. Anim. p.* 280.

 portion

portion of the ſixth ſenſe, remarkable veſſels and reſervoirs *, a prodigious quantity of ſeminal fluid, enormous teſticles, a penis of immoderate length; and all theſe parts are concealed within the body, which muſt render them more hot and active. Of all animals the mole is moſt amply endowed with generative organs, and conſequently with their relative ſenſations. It has, beſides, a delicate ſenſe of touch; a ſkin as ſoft as velvet; a very fine ear, and ſmall hands, with five fingers, very different from the extremities of other quadrupeds, and nearly ſimilar to the human hand; great ſtrength in proportion to the ſize of its body; a compact ſkin; and a perpetual vigour. So lively and reciprocal an attachment ſubſiſts between the male and female, that they ſeem to dread or diſreliſh all other ſociety. They enjoy the placid habits of repoſe and of ſolitude, the art of ſecuring themſelves from diſquiet and injury, of inſtantaneouſly making an aſylum or habitation, of extending its dimenſions, and of finding a plentiful ſubſiſtence, without the neceſſity of going abroad. Theſe are the manners, the diſpoſitions, and the talents of the mole; and they are unqueſtionably preferable to talents

* Teſtes maximos, paraſtatas ampliſſimas, novum corpus ſeminale ab his diverſum ac ſeparatum—penem etiam facile omnium, ni fallor, animalium longiſſimum; ex quibus coligere eſt, maximam præ reliquis omnibus animalibus voluptatem in coitu, hoc abjectum et vile animalculum percipere, ut habeant quod ipſi invidiant qui in hoc ſupremas vitæ ſuæ delicias collocant; *Ray, Synopſ. Animal. Quad. p.* 239.

more

more brilliant and more incompatible with happineſs, than the moſt profound obſcurity.

The mole ſhuts up the entrance of her retreat, and ſeldom leaves it, unleſs compelled by the admiſſion of water, or when its manſion is demoliſhed by art. She makes a round vault in the meadows, and generally a long trench in the gardens; becauſe it is eaſier to remove cultivated ground, than a turf rendered compact and ſolid by the roots of herbs. She continues not long in miry nor in hard ſtony ground, but delights in a ſoft earth, ſtored with eſculent roots, and well peopled with inſects and worms, which conſtitute her chief nouriſhment.

As the moles ſeldom leave their ſubterranean abodes, they have few enemies, and eaſily elude the carnivorous animals. The overflowing of rivers is their greateſt ſcourge: During inundations, they are ſeen ſwimming in vaſt numbers, and uſing every effort to gain the more elevated grounds; but moſt of them periſh, as well as their young, who remain in their holes. Without this devaſtation, the great talents they have for multiplying would render them extremely incommodious to man. They couple about the end of winter, and go but a ſhort time with young; for we find them very ſmall in the month of May. They generally bring forth four or five at a time; and it is eaſy to diſtinguiſh the hillocks under which they litter; for they are larger, and made with more art than the common kind. I believe theſe

animals bring forth more than once a year; but of this I cannot be certain: It is a fact, however, that we meet with young ones from April to Auguſt. Perhaps ſome of them may be later in coupling than others.

The habitation where they depoſit their young merits a particular deſcription; becauſe it is conſtructed with ſingular intelligence. They begin with raiſing the earth, and forming a pretty high arch. They leave partitions, or a kind of pillars at certain diſtances, beat and preſs the earth, interweave it with the roots of plants, and render it ſo hard and ſolid, that the water cannot penetrate the vault, on account of its convexity and firmneſs. They then elevate a little hillock below, upon the top of which they lay herbs and leaves, for a bed to their young. In this ſituation, they are above the level of the ground, and conſequently out of the reach of ordinary inundations, and are, at the ſame time, defended from the rains by the large vault that covers the internal one, upon the convexity of which they reſt, along with their young. This internal hillock, or vault, is pierced on all ſides with ſloping holes, which deſcend ſtill lower, and ſerve as ſubterraneous paſſages for the mother to go in queſt of food for herſelf and her offspring. Theſe by-paths are firm and beaten, extend about twelve or fifteen paces, and iſſue from the manſion like rays from a centre. We likewiſe find, under the ſuperior vault, the remains of the roots of the *colchicum*, or meadow

meadow ſaffron, which ſeem to be the firſt food given to the young. From this deſcription it is apparent, that the mole never comes out but at a conſiderable diſtance from her habitation, and that the moſt ſimple and moſt certain method of taking both the old and the young, is to make a round trench, which will cut off all the communicating paſſages. But, as the mole, upon the ſmalleſt noiſe, flies, and endeavours to carry off her young, it will be neceſſary to employ three or four men with ſpades to raiſe the hillock at once, or to make a trench almoſt inſtantaneouſly, and then to ſeize them, or to watch them as they attempt to eſcape.

It has been fooliſhly aſſerted by ſome writers *, that the mole and badger ſleep during the whole winter, without taking any food. The badger, as we formerly remarked †, comes out of his hole in winter, as well as in ſummer, in queſt of proviſions; and it is eaſy to be aſcertained of this fact, by the tracks he leaves upon the ſnow. The mole ſleeps ſo little in winter, that ſhe raiſes the earth in the ſame manner as ſhe does in ſummer; and the country people remark, that *a thaw approaches, becauſe the moles make hills.* They are, indeed, fond of warm places; and they are often caught by the gardeners in the months of December, January, and February.

* Urſus, *Meles*, Erinaceus, *Talpa*, Veſpertilio per hyemem dormiunt abſtemii; *Linn. Faun. Suec. p.* 8.

† See the article Badger.

The

The mole frequents cultivated countries only. There are none in the dry deſerts, nor in the cold climates, where the earth is frozen during the greateſt part of the year. The animal called the Siberian mole *, with green and yellow hair, is a different ſpecies from our mole, which abounds only from Sweden † to Barbary ‡; for, from the ſilence of travellers, it is preſumeable, that they exiſt not in hot climates. Thoſe of America are likewiſe different: The Virginian mole §, however, has a great reſemblance to ours, except in the colour of the hair, which is mixed with a deep purple. But the red mole of America is a different animal ‖. There are only two or three varieties in our common moles; we find them more or leſs brown or black; and we have ſeen them entirely white. Seba deſcribes and gives a figure of a black and white mole, which was found in Eaſt-Frieſland, and was ſomewhat larger than our mole ¶.

* Albert Seba, vol. i. p. 5.

† Linn. Faun. Suec. p. 7.

‡ Shaw's Travels.

§ Albert Seba, vol. i. p. 5.

‖ Id. ibid.

¶ This mole was found on the high-way. It is longer than the common mole, from which it differs in the colour of the ſkin only, which is variegated on the back and belly with black and white ſpots, together with a mixture of gray hair as fine as ſilk. The muzzle of this animal is long, and garniſhed with long briſtly hair. The eyes are ſo ſmall, that it is difficult to diſcover them; *Albert Seba*, vol. i. p. 68.

SUP-

SUPPLEMENT.

PONTOPPIDAN aſſures us, that the mole exiſts not in Norway, becauſe that country is too rocky to afford it proper accommodation.

The MOLE of the Cape of Good Hope.

I Have here given a figure of a mole found at the Cape of Good Hope, a ſtuffed ſkin of which was ſent me by M. Sonnerat. This mole pretty much reſembles the common ſpecies in the form of its body, in the eyes, in the ears, and in the tail; but it differs in the head, which is larger, and in the muzzle, which reſembles that of a Guiney-pig. The fore-feet are likewiſe different: The hair is not black, but dark brown, with a little yellow at the extremity of each hair. The tail is covered with large hairs of a yellowiſh white colour; and, in general, the hair of this mole is longer than that of the European. From all theſe deſcriptions we may conclude, that it is a particular ſpecies, and that, though allied to the common mole, it cannot be regarded as a ſimple variety.

THE PENSYLVANIA MOLE.

IN Penſylvania, ſays M. Kalm, there is a ſpecies of mole, which lives principally on roots. This animal digs, in the fields, ſmall winding ſubterraneous alleys. In proportion to its ſize, it has more ſtrength and rigidity in its paws than moſt other quadrupeds. In digging the earth, it uſes its feet like oars. M. Kalm put one of them into his handkerchief; and he found, that, in leſs than a minute, it had made a number of ſmall holes, as if the cloth had been pierced with a bodkin. It was very miſchievous; and, whenever it found any objects in its way, it immediately perforated them with its teeth. I preſented to it, continues M. Kalm, my ink-piece, which was made of ſteel; it began to bite the ink-piece; but was ſoon repelled by the hardneſs of the metal, and never afterwards inclined to bite any thing that was held out to it. This animal raiſes not the earth like the moles of Europe, but only makes ſmall paths under the ground *.

Theſe characters are not ſufficient to give us a proper knowledge of the animal, nor enable us to decide whether it belongs to the mole-tribe.

* Voyage de Kalm, tom. ii. p. 333.

THE BAT*.

THOUGH all beings are equally perfect in themſelves, ſince they proceed from the hands of the ſame Creator; yet, in relation to man, ſome beings are more accompliſhed, and others ſeem to be imperfect or deformed. Of the former kind are all thoſe whoſe figures appear to us to be agreeable and complete; becauſe all their parts and members are proportioned, all their movements and functions are eaſy and natural. The latter kind of beings, which to us have a hideous aſpect, comprehends all thoſe whoſe qualities are noxious to man, whoſe nature is uncommon, and whoſe form differs from the ordinary

* This animal has long extended toes to the fore-feet connected by thin broad membranes, extending to the hind-legs. —The common bat has ſhort ears, mouſe-coloured fur, tinged with red: Its length is two inches and a half, and the extent of the wings nine inches; *Pennant's Synopſ. of Quad. p.* 371.

In Greek, Νυκτερις; in Latin, *Veſpertilio*; in Italian, *Nottola, Nottula, Barbaſtello, Vilpiſtrello, Pipiſtrello, Sportegliono*; in German, *Flædermuſs*; in Swediſh, *Laderlapp*; in Poliſh, *Nietoperſz*.

Veſpertilio; *Geſner. Hiſt. Avi. p.* 766. *Icon. Avi. p.* 17. *Ray, Synopſ. Quad. p.* 243.

Veſpertilio murinus, caudatus, naſo oreque ſimplici, auribus capite minoribus; *Linn. Syſt. p.* 47.

Veſpertilio vulgaris; *Klein. Quad. p.* 61.

Veſpertilio murini coloris, pedibus omnibus pentadactylis, auriculis ſimplicibus. Veſpertilio major; *Briſſon. Regn. Anim. p.* 224.

figures

figures from which we received our primary sensations, and derived those ideas which serve as models to our judgment. The head of a man upon the neck of a horse, and its body covered with feathers, and terminating in the tail of a fish, represents a picture of enormous deformity, for no other reason but because it unites what Nature has placed at the greatest distance. An animal, like the bat, which is half a quadruped and half a bird, and which, upon the whole, is neither the one nor the other, must be a monstrous being; because, by uniting the attributes of two opposite genera, it resembles none of those models presented to us in the great classes of Nature. It is an imperfect quadruped, and a still more imperfect bird. A quadruped should have four feet, and a bat should have feathers and wings. In the bat, the fore-feet, though they serve the animal for the double purpose of flying and of trailing its body on the ground, are neither wings nor feet. They are deformed extremities, the bones of which are enormously lengthened, and united by a membrane, which is neither covered with feathers nor with hair. They are a species of pinions, or winged paws, in which we see only a claw of an inch in length; and the other four long toes must act along with the former; for they have no proper movements or separate functions. They are a kind of hands ten times larger than the feet, and four times longer than the body of the animal. In fine, they are parts which have rather

rather the air of caprice than of a regular production. This membrane covers the arm, forms the wings or hands of the animal, unites with the ſkin of the body, and, at the ſame time, ſurrounds the legs, and even the tail, which by this whimſical conjunction, becomes, in ſome meaſure, one of its toes. To theſe diſſimilarities and diſproportions of the body and its members may be added the deformities of the head, which are often much greater: For, in ſome ſpecies, the noſe is hardly viſible, the eyes are ſunk near the ear, and confounded with the cheeks: In others, the ears are as long as the body, or the face is twiſted into the form of a horſe-ſhoe, and the noſe turned up like a cock's comb. All of them have ſmall, obſcure, covered eyes, a noſe, or rather noſtrils, ill-formed, and a mouth extending from ear to ear: They all likewiſe endeavour to conceal themſelves, fly the light, inhabit dark places only, from which they never go out but during the night; they return at break of day, and faſten themſelves againſt the walls. Their motion in the air is rather a deſultory fluttering, than flying, which they execute very awkwardly. With difficulty they raiſe themſelves from the earth, and never fly to any great height: They quicken, relax, or direct their flight, in a manner the moſt bungling and imperfect. Their flight is neither rapid nor direct, but conſiſts of quick vibrations, in an oblique and winding direction. They fail not, however, in paſſing, to ſeize flies, gnats, and par-

ticularly

ticularly moths, which fly during the night only. Thefe they fwallow almoft entire; and we find, in their excrements, portions of wings and other dry and indigeftible parts of moths. Having one day defcended into the caverns of Arcy, to examine the ftalactites, I was furprifed to find, in a place covered with alabafter, and fo dark and profound, a kind of earth which was totally different: It was a thick mafs, feveral feet in extent, of a blackifh matter, almoft entirely compofed of fragments of the wings and legs of flies and moths, as if immenfe numbers of thefe infects had affembled in order to die and corrupt together. This, however, was nothing elfe but the dung of bats, probably amaffed during many years in a favourite part of thefe fubterranean caverns; for, through the whole of thefe caverns, which extend above half a quarter of a league, I faw no other collection of this matter; and I imagined that the bats had fixed upon this place for their common abode; becaufe it was reached by a glimmering light from an aperture in the rock, and that they chofe not to go farther, left they fhould be loft in a darknefs too profound.

Bats are real quadrupeds: Except the faculty of flying, they have nothing in common with birds. But, as the action of flying implies great ftrength in the upper and anterior parts of the body, the bats have their pectoral mufcles much ftronger and more flefhy than thofe of quadrupeds; and in this they have an affinity to

the birds. They differ from birds, however, in every other part of their ſtructure, both external and internal: The lungs, the heart, the organs of generation, and all the other viſcera, are ſimilar to thoſe of quadrupeds, except the penis, which is pendulous and looſe, a thing peculiar to man, the monkeys, and the bats. Like the quadrupeds, the bats are viviparous, and have teeth and paps. It is ſaid that they bring forth but two at a time, and that they ſuckle their young, and even carry them when flying. In ſummer they copulate and bring forth; for they are in a torpid ſtate during winter. Some cover themſelves with their wings as with a mantle, and ſuſpend themſelves by the hind feet to the vaults of ſubterraneous caverns; others ſtick faſt to old walls, or retire into holes. Wherever they take up their winter abode, they always aſſemble in ſuch numbers as to ſecure them againſt the effects of cold. They paſs the winter without food or motion, never awake till the ſpring, and again retire at the end of autumn. They ſupport hunger better than cold: Though carnivorous animals, they can ſubſiſt ſeveral days without food. When they get into a larder, they fix upon the ſuſpended meat, and eat fleſh whether raw or roaſted, freſh or corrupted.

Two ſpecies of bats only have been deſcribed as natives of our climate. Beſide theſe, M. Daubenton has diſcovered other ſix, which are equally numerous and common. It is

aſtoniſhing, therefore, that they ſhould ſo long have eſcaped notice. Theſe ſpecies are perfectly diſtinct, and never aſſociate together.

The firſt, which is well known, is the common bat, of which we have already given the ſynonimes.

The ſecond, or long eared *, is likewiſe known to the naturaliſt, and is perhaps ſtill more numerous than the common bat. The long-eared bat is much leſs than the common ſpecies; its wings are likewiſe ſhorter, and its muzzle ſmaller and ſharper, and its ears of an immoderate ſize.

The third ſpecies, which we ſhall denominate the *Noctule*, from the Italian word *notula*, was not known, though very common in France, and even more frequent than the two preceding ſpecies. This bat is found under the eaves of houſes, caſtles, and churches, and alſo in the hollows of old trees. It is nearly as large as the common bat. Its ears are broad and ſhort, its hair reddiſh, and it has a ſharp piercing voice, like the ſound of a ſmall bell †.

The

* Bat with ears an inch long, thin, and almoſt pellucid; the body and tail are only one inch and three quarters long. This and all other bats, except the *Ternate* and the *horſe-ſhoe*, have a leſſer or internal ear, ſerving as a valve to cloſe the greater when the animal is aſleep; *Pennant's Synopſ. of Quad.* p. 371.

Veſpertilio auritus, naſo oreque ſimplici, auriculis duplicatis, capite majoribus; *Linn. Syſt.* p. 47.

† The noctule has the noſe ſlightly bilobated; ears ſmall and rounded; on the chin a minute verruca; hair of a red-

diſh

The fourth ſpecies we ſhall call the *Serotine*. It is ſmaller than the common bat or noctule, and nearly of an equal ſize with the long-eared bat. But it differs from the latter in having ſhort, pointed ears, blacker wings, and the hair of a deeper brown *.

The fifth ſpecies we ſhall name *Pipiſtrelle*, from the Italian word *pipiſtrello*, which likewiſe ſignifies a bat. The pipiſtrelle is not near ſo large as the common bat, the ſerotine, the noctule, or even the long-eared kind. It is the ſmalleſt and leaſt ugly of all the bats, though the upper lip is turgid, the eyes ſmall and deep ſunk, and the front much covered with hair †.

The ſixth ſpecies I call *Barbaſtelle*, from the Italian word *barbaſtello*, which alſo ſignifies a bat. This animal is nearly of the ſame ſize with the long-eared ſpecies: Its ears are as broad, but not near ſo long. The name *barbaſtelle* is the bet-

diſh aſh-colour; length to the rump two inches eight tenths; tail one inch ſeven tenths; extent of the wings 13 inches; *Pennant's Synopſ. of Quad. p.* 369.

* The ſerotine has a longiſh noſe, and ſhort ears, but broad at the baſe: The hair on the upper part of the body is brown mixed with ferruginous, and the belly of a paler colour. The length from noſe to rump is two inches and a half; *Pennant's Synopſ. of Quad. p.* 370.

† The pipiſtrelle has a ſmall noſe; the upper lip ſwells out a little on each ſide; the ears are broad, and the forehead covered with long hair: The colour of the upper part of the body is a yellowiſh brown, that of the lower part duſky, and the lips are yellow. It is the leaſt of bats, not one inch and a quarter long to the rump; the extent of the wings, ſix inches and a half; *Pennant's Synopſ. of Quad. p.* 370.

ter adapted to it, becauſe it appears to have large whiſkers: This, however, is only an appearance occaſioned by the turgidneſs of the cheeks, which form a kind of pudding above the lips. The muzzle is very ſhort, the noſe much flattened, and the eyes near the ears*.

Laſtly, we ſhall call the ſeventh ſpecies the *horſe-ſhoe*. The countenance of this animal is remarkably deformed. The moſt ſtriking feature is a membrane in the ſhape of a horſe-ſhoe, which ſurrounds the noſe and the upper lip. In France it is very common, and frequents the walls and vaults of old houſes. Some of them are larger, and others ſmaller; but they are otherwiſe ſo ſimilar in form, that we conſider them as of the ſame ſpecies. But, as I have remarked this difference, without finding any of an intermediate ſize, I cannot determine whether it is an effect of different ages, or a conſtant variety in the ſame ſpecies †.

* The barbaſtelle has a ſunk forehead, long broad ears, the lower part of the inner ſides touching each other, conceal the face and head, when looked at in front; the noſe is ſhort, and the end of it flatted; the cheeks are full; the upper part of the body is of a duſky brown, the lower aſh-coloured and brown: Its length to the rump about two inches, and the extent of the wings ten and a half; *Pennant's Synopſ. of Quad. p.* 370.

† This bat has a membrane at the end of the noſe in form of a horſe-ſhoe; the ears are long, broad at the baſe, and ſharp pointed, inclining backward: It wants the little or internal ear. Colour of the upper part of the body cinereous; of the lower, whitiſh. There is a greater and leſs variety; the greater is above three inches and a half long from the noſe to the tip of the tail; the extent of its wings above fourteen; *Pennant's Synopſ. of Quad. p.* 369.

Plate XCII.

BAT.

Plate XCIII.

SMALL HORSE SHOE BAT.

LONG EARD BAT.

Plate XCIV.

NOCTULE.

A Bell Sculpt.

SEROTINE.

Plate XCV.

BARBASTELLE.

A. Bell Sculp.t

PIPISTRELLE.

Plate XCVI.

HORSE SHOE BAT.

A. Bell Sculp.

HORSE SHOE BAT.

Suspended by the Feet.

THE FAT SQUIRREL *.

WE have three ſpecies of this animal, the fat ſquirrel, the garden ſquirrel, and the dormouſe, which, like the marmot, ſleep during the winter. Of theſe the fat ſquirrel is the largeſt, and the dormouſe the leaſt. Several authors have confounded theſe three ſpecies, though they are eaſily diſtinguiſhable. The fat ſquirrel is about the ſize of the common ſquirrel, and has its tail covered with long hair: The garden ſquirrel is not ſo large as a rat, has very ſhort hair on its tail, except near the extremity, where it is buſhy: The dormouſe is not larger than the common mouſe; the hair on its tail is longer than that of the garden ſquirrel, but ſhorter than that of the fat ſquirrel, and its tip is buſhy.

* Squirrel with thin naked ears; body covered with ſoft aſh-coloured hair; belly whitiſh; tail full of long hair; from noſe to tail, near ſix inches; tail four and a half; thicker in the body than the ſquirrel; *Pennant's Synopſ. of Quad. p.* 289.

In Greek, μυαξος, according to Geſner; Ελειος, according to the Grammarians; in Latin, *Glis*; in Italian, *Galero, Gliero, Ghiro*; in Spaniſh, *Liron*; in German, *Scebens-chlafer, Gruel*; in Poliſh, *Sozurek*; in Swiſs, *Rell, Rell muſc*; in French, *Le Loir, Liron, Rat-Liron, Rat-veule*.

Glis; *Geſner. Hiſt. Quad.* p. 550. *Icon. Quad.* p. 109. *Aldrovand. Quad.* p. 409.

Glis ſupra obſcure cinereus, infra ex albo cinereſcens; *Briſſon. Regn. Anim.* p. 160.

Sciurus glis, canus, ſubtus albidus; *Linn. Syſt.* p. 87.

 The

The garden ſquirrel differs from the other two, by having black ſpots near its eyes, and the dormouſe by having whitiſh hair upon its back. All the three are white or whitiſh on the throat and belly; but the garden ſquirrel is of a fine white, the fat ſquirrel only whitiſh, and the dormouſe rather yellowiſh than white, in all the under parts of the body.

Theſe animals are improperly ſaid to ſleep during winter; for it is not a ſtate of natural ſleep, but a torpor or numbneſs of the ſenſes and members, produced by a chillneſs of the blood. The internal heat of theſe creatures exceeds not that of the air. When the heat of the air is ten degrees above the freezing point, their temperature is preciſely the ſame. I have plunged the ball of a thermometer into the bodies of ſeveral living garden ſquirrels, and found their internal heat to be always nearly equal to the temperature of the air: I have even ſeen the thermometer ſink a degree or half a degree when applied to the heart, the temperature of the air being at that time only 11°. Now, we know, that the heat of man, and of moſt quadrupeds, is always more than 30 degrees. It is not, therefore, ſurpriſing that theſe animals, whoſe heat is ſo ſmall, ſhould fall into a benumbed ſtate, whenever their internal heat is not augmented by that of the external air; and this always happens when the thermometer exceeds not ten or eleven degrees above the freezing point. This is the true cauſe of the

torpid ſtate of what are called the ſleeping animals; a cauſe which, though common to all animals that ſleep during winter, has hitherto been overlooked. I have diſcovered it in the three animals under conſideration, in the hedge-hogs, and in the bats; and, though I have never had an opportunity of examining the marmot, I am perſuaded that its blood, like that of the other ſleepers, is cold; becauſe it is ſubject to torpor during the winter.

This torpid ſtate continues as long as the cauſe by which it is produced, and ceaſes with the cold. A few degrees of heat above ten or eleven is ſufficient to re-animate them; and, if kept in a warm place during the winter, they are never benumbed, but go about, and eat and ſleep from time to time, like other animals. When they feel cold, they roll themſelves up in the form of a ball, in order to expoſe leſs ſurface to the air, and to preſerve their natural warmth. It is in this form that they are found, during the winter, in hollow trees, and in holes of walls expoſed to the ſouth. There they lie, without the ſmalleſt motion, upon moſs and leaves; and, though toſſed about, they neither extend themſelves, nor exhibit any ſigns of life. From this ſtate nothing can rouſe them but the application of a gentle and gradual heat; for they die when ſuddenly brought near a fire. Though, in this ſtate, they have no motion, though their eyes are ſhut, and they ſeem to be deprived of every ſenſation;

yet they feel pain when it is acute. A wound, or a burn, makes them contract, and utter a low cry, which they even repeat ſeveral times: Hence their internal ſenſibility, as well as the action of the heart and lungs, ſtill ſubſiſt. It is preſumable, however, that theſe vital motions act not with equal force as when the animal is in its ordinary ſtate. The circulation, it is probable, proceeds in the large veſſels only; the reſpiration is ſlow and feeble; the ſecretions are inconſiderable; and no excrements are voided. There muſt likewiſe be little or no perſpiration, ſince they paſs ſeveral months without eating, which could not happen, if they loſt as much of their ſubſtance by perſpiration, as they do at other times, when they have an opportunity of repairing this natural waſte by taking nouriſhment. They ſtill, however, loſe ſome part; becauſe, in long winters, they die in their holes. Perhaps, likewiſe, it is not the duration, but the rigour of the cold that deſtroys them; for they ſoon die when expoſed to a ſtrong froſt. What induces me to think that they periſh not by loſs of ſubſtance, is, that in autumn they are exceedingly fat, and equally ſo when they revive in the ſpring. This quantity of fat ſerves for an internal nouriſhment to the animal, and ſupplies what it loſes by reſpiration.

As cold is the only cauſe of their torpor, and as they fall not into this ſtate but when the temperature of the air is below ten or eleven degrees,

they

they frequently revive during the winter; for, in this ſeaſon, there are often many days when the liquor in the thermometer ſtands at 12, 13, 14, and even higher degrees; and, during fine weather of this kind, the dormice come out of their holes in queſt of food, or eat what they had collected in autumn. Ariſtotle, and all the ſucceeding naturaliſts, have aſſerted, that the dormice paſs the whole winter without eating; that, in this ſeaſon of abſtinence, they grow very fat, and that they are better nouriſhed by ſleep alone, than other animals by food. This notion is both abſurd and impoſſible. The dormouſe, which ſleeps four or five months, could only fatten by the air it reſpires. Suppoſing a part of this air to be converted into nouriſhment, an augmentation ſo conſiderable could never be the reſult. It would not even be ſufficient to repair the continual waſte occaſioned by perſpiration. Ariſtotle might be led into this error by the mild winters of Greece, where the dormice ſleep not perpetually, but often revive, take plenty of food, and are, therefore, extremely fat, though in a torpid ſtate. The truth is, they are fat at all times, and particularly in ſummer and autumn. Their fleſh reſembles that of the Guiney-pig. The Romans reckoned dormice among their moſt delicate diſhes, and reared them in great quantities. Varro deſcribes the method of making warrens for them; and we learn from Appicius the manner of dreſſing them in the high taſte of his times. In this

practice, whether from a disgust at these animals, because they resemble rats, or from the badness of their flesh, the Romans have not been followed by other nations. I have been informed by peasants who had eat them, that they were not better than water-rats. Besides, the fat squirrel is the only species that is eatable; the flesh of the garden squirrel is bad, and has a disagreeable flavour.

In manners and dispositions, the fat squirrel greatly resembles the common species. It lives in forests, climbs trees, and leaps from branch to branch, with less agility indeed, because the squirrel has longer legs, and a body more light and meagre. They both, however, live upon the same food, namely, filberts, chesnuts, and wild fruits. The fat squirrel likewise eats small birds, which he takes in their nests. He makes not a nest in the tops of trees, like the squirrel; but he makes a bed of moss in the hollows of their trunks, or in the clefts of rocks; but he always chooses a dry place. He abhors moisture, drinks little, and seldom descends on the ground. He differs still more from the squirrel in this circumstance, that the latter is easily tamed, and the former continues always wild. They couple in the end of spring, and the females bring forth in summer, the litter generally consisting of four or five. The young grow quickly; and we are assured that they live six years only. In Italy, where these animals are still eat, the natives dig

pits

pits in the woods, and ftrew them with ftraw, mofs, and beach-maft. They choofe dry places, under the fhelter of rocks, and with a fouth expofure. To thefe the fat fquirrels refort in great numbers, and the people find them there in a torpid ftate towards the end of autumn, when they are in the beft condition for eating. Thefe fmall animals are bold, and defend their young to the laft extremity. They bite violently with their fore-teeth, which are very long, and of great ftrength. They neither fear the weafel nor fmall birds of prey. They efcape from the fox, becaufe he cannot follow them to the tops of trees. Their moft formidable enemies are the martins and wild cats.

The fat fquirrels are not generally diffufed. They appear not in very cold climates, fuch as thofe of Lapland and Sweden; at leaft, they are not mentioned by the northern naturalifts: The fpecies they defcribe is the dormoufe, which is the leaft of the three. Neither, I imagine, are they to be met with in very warm countries, becaufe our travellers are filent on this article. There are few or none in open countries, like Britain; they require temperate climates abounding with wood. We find them in Spain, in France, in Greece, in Italy, in Germany, and in Switzerland, where they live in the forefts upon the hills, and not on the tops of high mountains, like the marmots, which, though fubject to torpor from cold, feem to delight in froft and fnows.

The GARDEN SQUIRREL, GREATER DORMOUSE, or SLEEPER*.

THE fat ſquirrel dwells in foreſts, and ſeems to avoid the habitations of men. The garden ſquirrel, on the contrary, lives in gardens, and is ſometimes found in our houſes. The ſpecies is likewiſe more numerous, and more generally diffuſed: There are few gardens which are not infeſted with them. They neſtle in holes of the walls, run upon the trees and eſpaliers, ſingle out the beſt fruits, and devour them when they begin to be mature. They ſeem to prefer peaches, which, if we be deſirous of preſerving,

* The ſquirrel, with the eyes ſurrounded with a large ſpot of black, reaching to the baſe of the ears, and another behind the ears; head and whole body of a tawny colour; the throat and whole underſide of the body white, tinged with yellow; the tail long; the hairs at the beginning very ſhort, at the end buſhy; length, from noſe to tail, not five inches; the tail four; *Pennant's Synopſ. of Quad. p.* 291.

In Latin, *Sorex*; in German, *Haſel Muſſ*; at Dantzick, *Grauwert*; in Flemiſh, *Slaep-rate*; in Poliſh, *Myſzorzechowa*, *Koſzatka*; in French, *Le Lerot*.

Mus avellanarum major; *Geſner. Quad. p.* 735. *Icon. Quad. p.* 115. *Ray, Synopſ. Quad. p.* 219.

Glis ſupra obſcure cinereus, infra ex albo cinereſcens, macula ad oculos nigra; *Briſſon. Regn. Animal. p.* 161.

Mus quercinus, cauda elongata piloſa, macula nigra ſub oculos; *Linn. Syſt. Nat.*

we

Plate XCVII.

A.Bell sculp^{t}

GARDEN SQUIREL.

we ſhould be careful to deſtroy the garden ſquirrels. They alſo climb with eaſe pear, apricot, and plumb-trees; and, when ſoft fruits are not to be had, they eat almonds, filberts, nuts, and even leguminous plants. Of theſe they carry off great quantities into their retreats which they dig in the earth, and particularly in well cultivated gardens; for in old orchards, they are often found in the hollows of trees, where they make beds of herbs, moſs, and leaves. Cold benumbs or makes them ſleep, and they are revived by heat. Eight or ten of them are frequently found in the ſame place, all benumbed, and rolled up, in the midſt of their proviſion of nuts and filberts. They copulate in ſpring, and bring forth in ſummer. The litter conſiſts of five or ſix young, which grow very quickly; but which, nevertheleſs, are not fertile till the following year. Their fleſh is not eatable, like that of the fat ſquirrel: They have the ſame diſagreeable odour with the domeſtic rat; but the fat ſquirrel has no bad ſmell. They never become ſo fat, and want thoſe fatty follicles with which the inteſtines of the former are entirely inveſted. The garden ſquirrel is found in all the temperate climates of Europe, and even in Poland and Pruſſia; but he appears not to exiſt in Sweden and the more northerly regions.

The DORMOUSE, or SLEEPER *.

THE dormouſe is the leaſt ugly of all the rats. It has brilliant eyes, and a buſhy tail, which is rather fair than red. It never lives in houſes, and ſeldom in gardens; but, like the fat ſquirrel, frequents the woods, and dwells in the hollows of old trees. The ſpecies is by no means ſo numerous as that of the garden ſquirrel. The dormouſe is always found alone in its hole; and there is a conſiderable difficulty in procuring ſpecimens of them. It appears, however, that they are pretty frequent in Italy, and that they exiſt in northern climates; for Linnæus mentions them in his liſt of Swediſh animals †. But they ſeem not to inhabit Britain; for Mr. Ray ‡, who had ſeen them in Italy, ſays, that the *little ſleeping rat* of England is not red on the back, like that of Italy, and that perhaps it is a different ſpecies. In France, it is the ſame as in Italy, and is

* The ſquirrel with round naked ears; full black eyes; body of a tawny red; throat white; ſize of a mouſe, but plumper; tail two inches and a half long, and pretty hairy, eſpecially towards the end; *Pennant's Synopſ. of Quad.*

Mus avellanarum minor; *Ald. Quad. p.* 440. *Ray, Synopſ. Quad. p.* 220.

Mus avellanarius, cauda elongata piloſa, corpore rufo, gula albicante, pollicibus poſticis muticis; *Linn. Syſt. p.* 83.

Glis ſupra rufus, infra albicans; *Briſſon. Regn. Anim. p.* 162.

† Faun. Suec. p. 11. ‡ Ray, Synopſ. Quad. p. 220.

Plate XCVIII.

DORE MOUSE.

is very well deſcribed by Aldrovandus *. But he tells us, that there are two ſpecies in Italy; the one is rare, and has the ſmell of muſk; the other is common, and has no particular odour; and that, at Bologna, they are both called dormice, becauſe of their reſemblance in figure and ſize. We know only the ſecond of theſe ſpecies; for our dormouſe has no ſmell, either good or bad. Like the garden ſquirrel, it wants the fatty follicles which inveſt the inteſtines of the fat ſquirrel, never becomes ſo fat, and, though its fleſh has no diſagreeable odour, it makes not good eating.

Like the fat and garden ſquirrels, the dormouſe rolls itſelf up and ſleeps in winter, revives in mild weather, and amaſſes nuts and dry fruits. It makes its neſt upon trees, like the common ſquirrel, but generally lower, between the branches of hazels, or bruſhwood. The neſt, which conſiſts of interwoven herbs, is about ſix inches diameter, and is open above only. I have been aſſured by many countrymen, that they have found theſe neſts in cut woods, and in hedges; that they are ſurrounded with moſs and leaves; and that, in each neſt, there were three or four young. When they grow large, they abandon the neſts, and harbour in the hollows or under the trunks of old trees, where they repoſe, amaſs proviſions, and ſleep during the winter.

* Aldrovand. Hiſt. Quad. Digit. p. 440.

THE BROWN RAT*.

TO this ſpecies of rat, which has been known for a few years paſt only, I have given the appellation of *Surmulot*. This animal is mentioned by no naturaliſt, except M. Briſſon, who calls it the *wood-rat*. It is larger and more miſchievous than the common rat. It has reddiſh hair, a very long naked tail, and the ſpine of the back arched like that of the ſquirrel. Its body is likewiſe thicker; and it has whiſkers like a cat. It is not above nine or ten years ſince this ſpecies was diffuſed through the environs of Paris. From whence theſe animals came, is uncertain; but they have multiplied prodigiouſly. Neither is this wonderful, when we conſider that they generally produce from 12 to 15 young at a litter, and ſometimes even 19. They were firſt diſcovered at Chantilly, Marly-la Ville, and Verſailles, where they committed great ra-

* Rat with the head, back, and ſides, of a light brown colour, mixed with tawny and aſh-colour; breaſt and belly dirty white; feet naked, and of a dirty fleſh-colour; fore-feet furniſhed with four toes, and a claw inſtead of the fifth; length from noſe to tail nine inches; tail the ſame; weight eleven ounces; is ſtronger made than the common or black rat; *Pennant's Synopſ. of Quad. p.* 300.

Le Rat des bois. Mus cauda longiſſima, ſupra dilute fulvus, infra albicans. Mus ſylveſtris. *Briſſon. Regn. Anim. p.* 170.

Le Surmulot; *Buffon.*

vages.

vages. M. le Roy favoured me with great numbers of them, both living and dead, and communicated to me the remarks he had made upon this new ſpecies. The males are larger, ſtronger, and more miſchievous than the females. When hard purſued, or when we attempt to ſeize them, they face about, and bite the ſtick or the hand that ſtrikes them. Their bite is not only cruel, but dangerous; for it is inſtantly followed by a conſiderable ſwelling, and the wound, though ſmall, does not ſoon heal. The females bring forth three times a year: Hence two individuals of this ſpecies may produce at leaſt 36 young in 12 months. The mothers prepare a bed for their offspring. Some of the females ſent us, which we kept in cages, were with young; and, two or three days before they brought forth, we obſerved that they gnawed the wood of the cages, and made of the cuttings, which were in conſiderable quantities, a convenient bed for their little ones.

The brown rats have ſome qualities which make them approach to the nature of the water-rat. Though every where diffuſed, they ſeem to prefer the banks of waters. The dogs purſue them with the ſame remarkable fury as they chaſe the water-rat. When purſued, and they find it equally eaſy to take to the water, or to conceal themſelves in bruſh-wood, they chooſe the water, enter it without fear, and ſwim with great dexterity and eaſe. This phænomenon is chiefly exhibited when they cannot regain their holes; for, like

like the long-tailed field-mouse, they dig subterraneous retreats, or rather they nestle in those made by the rabbits. The brown rats may be taken in their holes by ferrets, which pursue them with equal ardour as they do the rabbit.

These animals pass the summer in the country: And, though they feed principally upon fruits and grain, they eat young hares, partridges, and fowls. When they enter a hen-house, like the pole-cat, they kill more than they can eat. Towards the month of November, the mother and all the young quit the fields, and come in troops into the barns, where they do infinite mischief, by mincing the straw, consuming the grain, and infecting every thing with their ordure. The old males remain in the fields, each inhabiting his own hole, where, like the field-mice, they amass acorns, beach-mast, &c. filling the holes to the top, and remaining themselves at the bottom. They sleep not, like the dormouse; but go out in winter, especially when the weather is mild. Those who take up their abode in barns, banish all the mice and rats. It has even be remarked, that, since the multiplication of the brown rat about Paris, the common rats are much less frequent.

Plate XCIX.

A Bell Sculp.t

BROWN RAT.

The ALPINE MARMOT *.

OF all modern naturalifts, Gefner has brought greateft advantages to the fcience. To great erudition, he has joined good fenfe and enlarged views. Aldrovandus is only the commentator of Gefner, and authors of lefs note have implicitly copied him. We hefitate not, therefore, to borrow facts from him with regard to the marmots, which are natives of his country, and concerning which he was better informed than us, though, like him, we have kept feveral of them

* Marmot with fhort round ears, hid in the fur; cheeks large; colour of the head and upper part of the body, brownifh afh, mixed with tawny; legs and lower part of the body reddifh; fubject to vary in colour, the Polifh marmot being much more red, and of a brighter hue; four toes before, five behind; tail pretty full of hair; length from nofe to tail about fixteen inches, tail fix; and body thick; *Pennant's Synopf. of Quad.* p. 268.

In Latin, *Mus Alpinus*; in Italian, *Murmont, Marmota, Marmontana*; in German and Swifs, *Murmelthier, Murmentle, Miftbellerle*; in Polifh, *Bobak, Swiffez*; in French, *La Marmotte.*

Mus Alpinus Plinii; *Gefner, Quad.* p. 743. *Icon. Quad.* p. 108. *Ray, Synopf. Quad.* p. 221.

Mus marmota, cauda abbreviata fubpilofa, auriculis rotundis, buccis gibbis; *Linn. Syft.* p. 81.

Glis, Marmota Italis; *Klein. Quad.* p. 56.

Glis, pilis e fufco et flavicante mixtis veftitus. Marmota Alpina; *Briffon. Regn. Animal.* p. 165.

 in

in a ſtate of confinement. What he ſays correſponds ſo exactly with our own obſervations, that we doubt not the truth of his remarks, when he retails facts of which we have no knowledge.

The marmot, when taken young, may be rendered nearly as tame as our domeſtic animals. He learns to ſeize a ſtick, to dance, to perform various geſticulations, and to obey the voice of his maſter. Like the cat, he has an antipathy againſt dogs. When he begins to be familiar in the houſe, and perceives that he is protected by his maſter, he attacks and bites dogs of the moſt formidable kind. Though not ſo large as a hare, he is ſtouter, and his ſtrength is aided by a peculiar ſuppleneſs and dexterity. With his fore-teeth, which are pretty long, he bites moſt cruelly. He attacks not, however, either dogs or men, unleſs when he is irritated. If not prevented, he gnaws furniture and ſtuffs, and, when confined, even pierces through wood. As his limbs are ſhort, and his toes faſhioned like thoſe of the bear, he often ſits on end, and walks with eaſe on his hind-legs. He carries food to his mouth with the fore legs, and eats in the manner of a ſquirrel. He runs pretty quickly up hill, but ſlowly on a plain. He climbs trees, and mounts between the clefts of rocks, or two adjoining walls; and the Savoyards, it is ſaid, learned from the marmots to climb for the purpoſe of ſweeping chimneys. They eat every thing preſented to them, as fleſh, bread, fruit, roots, pot-herbs, may-bugs, graſs-

graſs-hoppers, &c.; but milk and butter they prefer to every other aliment. Though leſs inclined to theft than the cat, they endeavour to ſlip into the dairy, where they drink great quantities of milk, making, like the cat, a purring noiſe expreſſive of pleaſure. Beſides, milk is the only liquor that is agreeable to them; for they rarely drink water; and they refuſe wine.

As to figure, the marmot has ſome reſemblance both to the bear and to the rat. It is not, however, as Perrault and ſome others imagined, the *arctomys* or *bear-rat* of the ancients. Its noſe, lips, and form of the head, reſemble thoſe of the hare; it has the hair and claws of the badger, the teeth of the beaver, the whiſkers of the cat, the eyes of the fat ſquirrel, and the legs of the bear. The tail is ſhort, and the ears terminate abruptly. The hair on the back is of a reddiſh brown colour, more or leſs deep: This hair is pretty rude; but that of the belly is reddiſh, ſoft, and buſhy. Its voice reſembles the murmuring of a young dog, when careſſed, or in a ſporting humour. But, when irritated or frighted, it makes a whiſtling noiſe, ſo loud and piercing, that it hurts the ear. It loves cleanlineſs, and retires, like the cat, to void its ordure. But, like the rat, it has a very ſtrong diſagreeable ſmell, eſpecially in ſummer. It is remarkably fat in autumn: Beſides a large epiploon, it has two very thick fatty follicles. All the parts of its body, however, are not equally fat. The

back and reins are loaded with firm and ſolid fat, ſimilar to the fleſh of a cow's udder. Thus the marmot would make very good eating, if it had not always a diſagreeable odour, which cannot be concealed but by very ſtrong ſeaſonings.

This animal, which delights in the regions of froſt and ſnow, and which is found only on the tops of the higheſt mountains, is more ſubject than any other to be rendered torpid by cold. In the end of September, or beginning of October, he retires into his hole, from which he comes not out till the beginning of April. His retreat is made with precaution, and furniſhed with art. It is capacious, broader than long, and very deep, ſo that it can contain ſeveral marmots, without any danger of corrupting the air. With their feet and claws, which are admirably adapted for the purpoſe, they dig the earth with amazing quickneſs, and throw it behind them. It is not a hole or a ſtraight or winding tube, but a ſpecies of gallery made in the form of a Y, each branch of which has an aperture, and both terminate in one, where the animal lodges. As the whole is made on the declivity of a mountain, the innermoſt part alone is on a level. Both branches of the Y are inclined, and the one is uſed for depoſiting the excrements of the animals, and the other for their going out and coming in. The place of their abode is well lined with moſs and hay, of which they make ample proviſion during the ſummer. It is even affirmed, that this labour

labour is carried on jointly; that ſome cut the fineſt herbage, which is collected by others, and that they alternately ſerve as vehicles for tranſporting it to their dens. One, it is ſaid, lies down on his back, allows himſelf to be loaded with hay, extends his limbs, and others trail him in this manner by the tail, taking care not to overſet him. Theſe repeated frictions are aſſigned as the reaſon why the hair is generally rubbed off from their backs. But, it is more probable, that this effect is produced by their frequent digging of the earth, which is ſufficient to peel the hair off their backs. Whatever may be in this, it is certain, that they dwell together, and work in common at their habitations, where they paſs three fourths of their lives. Thither they retire during rain, or upon the approach of danger, and never go out but in fine weather, and even then to no great diſtance. One ſtands ſentinel upon a rock, while the others ſport on the graſs, or are employed in cutting it to make hay. When the ſentinel perceives a man, an eagle, a dog, &c. he alarms the reſt by a loud whiſtle, and is himſelf the laſt to enter the hole.

They make no proviſions for winter, as if they divined that they would then have no uſe for victuals. But, when they perceive the firſt approaches of the ſleeping ſeaſon, they ſhut up the two entrances of their habitation; and this they perform with ſuch labour and ſolidity, that it is more eaſy to dig the earth any where

else, than in the parts they have fortified. They are at this time very fat, weighing sometimes twenty pounds; and they continue to be plump for three months; but afterwards gradually decay, and are extremely emaciated at the end of winter. When discovered in their retreats, they are rolled up in the form of a ball, covered with hay; and they are carried off in so torpid a state, that they may be killed without seeming to feel pain. The fattest are chosen for eating, and the young ones for taming. Like the dormice, they are revived by a gradual heat; and those which are fed in houses, and kept warm, never become torpid, but are equally lively and active in winter as in summer. As to the sleeping of the marmot, we shall not repeat what was said under the article of the fat squirrel. The cooling of the blood is the sole cause of this phænomenon; and it has been remarked by other writers, that, in this torpid condition, the circulation, as well as all the secretions, were extremely languid, and that the blood, not being renewed by fresh accessions of chyle, has no serosity *. Whether they remain constantly torpid for seven or eight months, as is alledged by most authors, is uncertain. Their holes are deep, and they live together in numbers; a considerable heat, therefore, must be preserved for some time, and they may eat the herbage they have amassed. We are even told by M. Altmann, in his treatise

* Phil. Transf. No. 397.

on the animals of Switzerland, that the hunters allow the marmots to remain unmolested for three weeks or a month; that they never dig in soft weather, or during a warm wind; that, without these precautions, the marmots awaken and dig still deeper; but that, by opening their retreats during hard frosts only, they find them so torpid as to be carried off with ease. We may, therefore, conclude, that they, in every respect, resemble the dormice; and that, if they remain longer torpid, it is because they inhabit a climate where the winter is longer.

These animals produce but once a year, and the litter generally consists of three or four. The growth of their young is very quick; they live only nine or ten years; and the species is neither numerous nor much diffused. The Greeks were unacquainted with the marmot, or, at least, they have made no mention of it. Among the Latins, Pliny is the first who takes notice of it, under the name of *mus Alpinus*, or Alpine rat: And, indeed, though there are several species of rats in the Alps, none of them is so remarkable as the marmot, or, like it, lives in the summits of the highest mountains. The other species confine themselves to the valleys, the sides of the hills, or first mountains. Besides, the marmot never descends from the heights, but seems peculiarly attached to the chain of the Alps, and to prefer a south or east exposure to that of the north or west. He is found, however, in the Apennines,

pines, the Pyrenees, and the higheſt mountains of Germany. The *bobak* of Poland *, to which M. Briſſon †, and, after him, Meſſrs. Arnault de Nobleville et Salerne ‡, have given the name of *marmot*, differs from this animal, not only in colour, but in the number of toes; for it has five toes on the fore-feet. The claw of the great toe appears beyond the ſkin; and we find within, the two phalanges of the fifth toe, which is entirely wanting in the marmot. Hence the *bobak*, or Poliſh marmot, the *monax*, or marmot of Canada, the *cavia*, or marmot of Bahama, and the *cricet*, or marmot of Straſburgh, are all different ſpecies from the Alpine marmot.

SUPPLEMENT.

I HAVE here given the figure of an animal called *Monax*, or *Marmot of Canada*. The deſign was ſent me by Mr. Colinſon, but without any deſcription. This ſpecies of marmot ſeems to differ from the other marmots, by its having only *four* toes on the fore-feet, while the Alpine marmot and the bobak or Poliſh marmot have

* Auctuarium Hiſt. Nat. Poloniæ, Auct. Rzaczynſki, p. 327.
† Regn. Anim. p. 165.
‡ Hiſt. Nat. des Animaux.

 five

five toes both on the fore and the hind feet. There is alſo ſome difference in the form of the head, which is more thinly covered with hair. The tail of the monax is longer and leſs buſhy than that of the common marmot; ſo that this Canada animal may be regarded rather as a neighbouring ſpecies than as a ſimple variety of the Alpine marmot. In this ſpecies, I preſume, the animal called the *Whiſtler* by Baron Hontan may be ranked *. He ſays, that it is found in the northern parts of Canada; that it is nearly of the ſize of a hare, but ſhorter in the body; that it is hunted for its ſkin only, which is much valued; but that its fleſh is not good. He adds, that the Canadians call theſe animals *Whiſtlers*, becauſe, in fine weather, they whiſtle at the entrance of their holes, which he has frequently heard. Our Alpine marmot makes the ſame kind of whiſtling noiſe.

* Voyage du Baron de la Hontan, tom. i. p. 95.

The MARMOT of Kamtschatka.

THE Russian travellers have discovered an animal in Kamtschatka, which they have called a *marmot*, but of which they have given us a very slight intimation only. They tell us, that its skin resembles, at a distance, the variegated plumage of a beautiful bird; that, like the squirrel, it uses its fore-feet in eating; and that it feeds on roots, berries, and cedar-nuts. It is worthy of remark, that the expression *cedar-nuts* presents a false idea; for the true cedar bears cones, and other trees, called by the name of cedars, bear berries.

The MARMOT of the Cape of Good Hope.

WE owe the first notices of this animal to M. Allamand, a learned naturalist and professor at Leyden. M. Pallas has described it under the name of *Cavia Capensis*, and M. Vosmaer under that of the *Bastard African Marmot*. Both have given a figure of it from the same plate, of which M. Allamand has sent me a copy.

In writing on this ſubject to M. Daubenton, he remarks:

‘ I ſend you the figure of a ſpecies of cabiai, ‘ (I know no other name to give it), which I re- ‘ ceived from the Cape of Good Hope. It is ‘ not ſo well drawn as I could wiſh; but, as I ‘ have the animal ſtuffed in my cabinet, if you ‘ are inclined, I ſhall tranſmit it to you by the ‘ firſt opportunity.’

We accepted not this obliging offer of M. Allamand, becauſe we were ſoon after informed, that one or two of theſe animals had arrived in Holland alive, and hoped that ſome naturaliſt would furniſh us with an exact deſcription. Both M. Pallas and M. Voſmaer have accordingly deſcribed this animal, and I ſhall here give extracts from their remarks:

“ This animal,” ſays M. Voſmaer, “ is known at the Cape of Good Hope, under the name of the *Rock Badger*, probably becauſe it lives among rocks, and under the earth, like the badger; to which, however, it has no reſemblance. It has a greater affinity to the marmot, and yet it differs conſiderably from that animal. . . . . Kolbe is the firſt who mentions this animal, and he ſays, that it reſembles the marmot more than the badger.”

We ſhall adopt the name of the *Marmot of the Cape*, in preference to that of the cavia, becauſe it differs from the cavia or cabiai in many reſpects: 1. In the climate, the cavia being an animal

animal of South America, while the other is found in Africa only. 2. Becauſe cavia is a Braſilian word, and ought not to be tranſported into Africa, ſince it belongs to the true cavia, and to the cavia-cobaia, or Guiney-pig. Laſtly, becauſe the cabiai inhabits only the margins of waters, and has membranes between its toes; but the marmot of the Cape lives among rocks, and in dry grounds, which it can dig with its claws.

"The firſt animal of this ſpecies," ſays M. Voſmaer, "that appeared in Europe, was ſent by M. Tulbagh to the Prince of Orange, and its ſkin is ſtill preſerved in his cabinet. The colour of the firſt differed greatly from that of another which arrived afterwards: It was very young and very ſmall. That which I am about to deſcribe was a male, and was ſent me by M. Bergmeyer of Amſterdam. . . . . The life of this animal, according to my information, is very melancholy; for it ſlept much during the voyage. Its motion is ſlow, and performed by leaps. But, perhaps, in a natural ſtate, it is equally active as the rabbit. Its cries were frequent, but ſhort, ſharp, and piercing."

I ſhall obſerve in paſſing, that this character brings the animal ſtill cloſer to the marmot; for the Alpine marmots often make a ſharp whiſtling noiſe.

"In Holland," continues M. Voſmaer, "they feed this marmot with bread and different kinds of pot-herbs. It is probable that this animal

brings

brings forth often, and in great numbers. The form of their feet indicates that they are deftined for digging the earth. The prefent marmot having died at Amfterdam, I gave it for diffection to M. Pallas.

" In ftature it refembles the common rabbit, but it is thicker and more collected. The belly is peculiarly grofs; the eyes are beautiful, and of an ordinary fize. The eye-brows, both above and below, are garnifhed with fome fhort black hairs, above which there are five or fix hairs of the fame colour, but long, that turn back toward the head. It has fimilar whifkers on the upper lip, about the middle of the muzzle.

" The nofe is black, naked, and divided by a fine future, which defcends to the lip. The noftrils refemble a cord broken through the middle. Under the muzzle, on the throat and cheeks, are fome long, rude, black hairs; and hairs of the fame kind are fcattered over the whole body. In the palate there are eight deep furrows; the tongue is very thick, tolerably long, garnifhed with fmall papillæ, and oval at the point. In the upper jaw, there are two ftrong teeth, which protrude over the under jaw, and are confiderably diftant from each other, having a kind of triangular appearance. In the under jaw, it has four clofe cutting teeth, which are very broad, long, and flat. The grinders, of which it has four on each fide, are alfo large; and a fifth of a fmaller fize may be added to the number. Its

Its fore-legs are ſhort, and half covered with the ſkin of the body. The feet are black and naked. Thoſe before have four toes; the middle one is longeſt; and the exterior one is ſhorter, and ſeems to adhere to the third. The toes are armed with round ſhort claws, which adhere to the ſkin like the human nails. There are three toes on the hind-feet; the middle one only is furniſhed with a crooked claw, and the exterior toe is ſhorter than the others. The animal leaps on its hind-legs, like the rabbit. It has not the ſmalleſt veſtige of a tail. The colour of the hair is gray, or a yellowiſh brown, nearly like that of a wild rabbit; but it is deeper upon the head and back; and the breaſt and belly are whitiſh. There is alſo a whitiſh belt upon the neck and near the ſhoulders. This belt forms not a collar, but terminates at the top of the fore-legs. In general, the hair is ſoft and woolly."

END OF THE FOURTH VOLUME.

Plate C.

A Bell Sculpt

ALPINE MARMOT.

Plate CI.

A. Bell, Sculp.t

MONAX or MARMOT of CANADA.

Plate CII.

A. Bell sculp.

MARMOT of the CAPE of GOOD HOPE.